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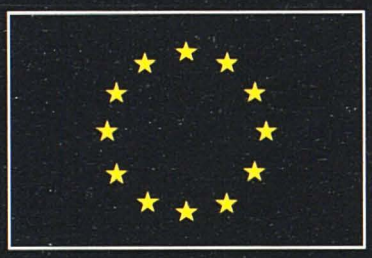

REPORTS AND STUDIES

ECONOMIC EVALUATION OF THE INTERNAL MARKET

No 4 1996

European Economy appears twice a year. It contains important reports and communications from the Commission to the Council and the Parliament on the economic situation and developments. As a complement to *European Economy*, the series *Reports and studies* will be published on problems concerning economic policy.

Three supplements accompany the main periodical:

- Series A—'Economic trends' appears monthly except in August and describes in a more succinct way financial and economic developments in the European Union.

- Series B—'Business and consumer survey results' gives the main results of opinion surveys of chief executives (orders, stocks, production outlook, etc.) and of consumers (economic and financial situation and outlook, etc.) in the Community, and other business cycle indicators. It also appears monthly, with the exception of August.

- Series C—'Economic reform monitor' provides brief overviews of economic developments and the progress of reform in the 10 countries of Central Europe with which the EU has negotiated association agreements, as well as in the two largest transitional economies to have emerged from the former Soviet Union: Russia and Ukraine. It appears four times a year.

Subscription terms are shown on the back and the addresses of the sales offices are shown on page 3 of the cover.

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European Commission

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Economic evaluation of the internal market

Abbreviations and symbols used

Member States

B	Belgium
DK	Denmark
D	Germany
WD	West Germany
EL	Greece
E	Spain
F	France
IRL	Ireland
I	Italy
L	Luxembourg
NL	The Netherlands
A	Austria
P	Portugal
FIN	Finland
S	Sweden
UK	United Kingdom
EUR 9	European Community excluding Greece, Spain and Portugal
EUR 10	European Community excluding Spain and Portugal
EUR 12–	European Community, 12 Member States including West Germany
EUR 12+	European Community, 12 Member States including Germany
EUR 15+	European Community, 15 Member States including Germany

Currencies

ECU	European currency unit
BEF	Belgian franc
DKK	Danish krone
DEM	German mark (Deutschmark)
GRD	Greek drachma
PTE	Portuguese escudo
FRF	French franc
NLG	Dutch guilder
IEP	Irish pound (punt)
LUF	Luxembourg franc
ITL	Italian lira
ESP	Spanish peseta
GBP	Pound sterling
USD	US dollar
CHF	Swiss franc
YEN	Japanese yen
CAD	Canadian dollar
ATS	Austrian schilling
R	Russian rouble

Other abbreviations

ACP	African, Caribbean and Pacific countries having signed the Lomé Convention
ECSC	European Coal and Steel Community
EDF	European Development Fund
EIB	European Investment Bank
EMCF	European Monetary Cooperation Fund
EMS	European Monetary System
ERDF	European Regional Development Fund
Euratom	European Atomic Energy Community
Eurostat	Statistical Office of the European Communities
GDP (GNP)	Gross domestic (national) product
GFCF	Gross fixed capital formation
LDCs	Less-developed countries
Mio	Million
Mrd	1 000 million
NCI	New Community Instrument
OCTs	Overseas countries and territories
OECD	Organization for Economic Cooperation and Development
OPEC	Organization of Petroleum Exporting Countries
PPS	Purchasing power standard
SMEs	Small and medium-sized enterprises
toe	Tonne of oil equivalent
:	Not available

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Vorwort

Zu Beginn der 80er Jahre stand die Europäische Union vor großen ökonomischen Schwierigkeiten, insbesondere unzureichender Wettbewerbsfähigkeit und wachsender Arbeitslosigkeit. Der Handel zwischen den Mitgliedstaaten wurde immer noch durch vielerlei Hindernisse beeinträchtigt, die es der europäischen Wirtschaft nicht ermöglichten, von der fortschreitenden Integration in vollem Umfang zu profitieren. Vor diesem Hintergrund wurde 1985 die Schaffung eines großen Binnenmarktes beschlossen. Ende 1992 sollten alle Hindernisse für den freien Verkehr von Gütern, Dienstleistungen, Kapital und Personen beseitigt sein.

Vier Jahre nach 1992 ist der Großteil der dazu nötigen rechtlichen Normen in Kraft. Unionsweit haben Unternehmen diesen Schritt begrüßt. Der Binnenmarkt ist heute eine der größten Errungenschaften auf dem Weg zu einem vereinten Europa.

Auf der Grundlage der bisherigen Erfahrungen hat die Kommission eine Studie zu den wirtschaftlichen Auswirkungen dieses ehrgeizigen Programms erstellt, deren detaillierte Ergebnisse in dieser Ausgabe der *Europäischen Wirtschaft* zu finden sind.

Der Binnenmarkt ist, wie zahlreiche Kriterien beweisen, ein großer Erfolg. Zunächst hat er die Union wohlhabender gemacht: Schätzungen zufolge ist das BIP der Gemeinschaft um mehr als 1 % höher, als es ohne den Binnenmarkt gewesen wäre. Es wurden zwischen 300 000 und 900 000 zusätzliche Arbeitsplätze geschaffen. In einer Zeit, in der die Arbeitslosigkeit das wichtigste politische Problem in Europa darstellt, zeigen diese Zahlen, daß die europäische Integration konkrete, spürbare Ergebnisse bringt.

Weiterhin hat der Binnenmarkt einen Anstieg des innergemeinschaftlichen Handels um 20 bis 30 % bewirkt. Gleichzeitig nahmen die Direktinvestitionen stark zu: Zu Beginn der 90er Jahre flossen 44 % der weltweiten Direktinvestitionen in die EU, ein Beweis für die Attraktivität der Gemeinschaft. Diese Steigerung unserer Wettbewerbsfähigkeit ist ein entscheidender Vorteil in einer immer globaleren Wirtschaft.

Schließlich hatte der Binnenmarkt zwei vorteilhafte Effekte mit Blick auf die Vorbereitungen zur Währungsunion. Anstelle einer verstärkten Spezialisierung der nationalen Industrien der Mitgliedstaaten hat er ganz im Gegenteil zu einer verstärkten Angleichung der Industriestrukturen geführt. Außerdem hat er den Aufholprozeß der ärmeren Mitgliedstaaten beschleunigt. Er ist somit eine treibende Kraft hin zu wirtschaftlicher Konvergenz in Europa.

Schon bald wird durch die Wirtschafts- und Währungsunion die notwendige Ergänzung zum bereits zur Zufriedenheit funktionierenden Binnenmarkt erfolgen. Der Euro wird diejenigen Unsicherheiten und

Transaktionskosten reduzieren, die heute noch Entscheidungen der Marktteilnehmer behindern. Er wird die Transparenz und die Liquidität der Märkte verbessern und die vorteilhaften Effekte des Binnenmarktes verstärken. So wird eine einheitliche Währung zu einem Anstieg unseres Handels, unserer Investitionen und somit zu Wachstum und Beschäftigung führen.

Yves-Thibault de Silguy
Mitglied der Europäischen Kommission

Foreword

In the early 1980s, the European Union faced severe economic difficulties, notably weak competitivity and growing unemployment. Trade between Member States was still impeded by numerous obstacles which prevented the European economy profiting fully from its progressive integration. This explains why in 1985 it was decided to create a large single market: by the end of 1992, all barriers to the free circulation of goods, services, capital and persons were to be eliminated.

Four years after that deadline, the vast accompanying legislative programme is largely in place. Businesses around the Community have warmly welcomed the changes introduced. The single market is today one of the greatest achievements in the construction of Europe.

Based on the few years of experiences so far, the Commission has carried out an in-depth economic study of the consequences so far of the ambitious programme. This edition of European Economy presents the detailed results of that study.

The single market is a major success story judged on the basis of various criteria. Firstly, it has made the Union richer: estimates put the Community's GDP as being 1% higher now than it would have been without the single market. Meanwhile, employment is higher by 300 000 to 900 000 jobs than it would have been otherwise. At a time when unemployment has become the most acute political problem facing Europe, such figures show that European integration is already providing concrete and valuable results.

Secondly, the single market has fuelled an increase of trade between Member States, up by 20 to 30%. At the same time, foreign investment has also strongly grown: at the start of the 1990s, the EU was the location for 44% of worldwide foreign investment flows, proving how attractive our Community has become. This improvement in our competitivity is a crucial advantage in an increasingly globalized economy.

Finally, the single market has had two beneficial effects in the context of preparing for monetary union. Far from leading to an increased specialization of national industries across Member States, it has, on the contrary, led their industrial structures to become increasingly similar. Furthermore, it has helped accelerate the catch-up of the least advanced Member States. It constitutes therefore, a force for economic convergence within Europe.

Tomorrow, economic and monetary union will bring the necessary complement to the satisfactory operation of the single market. The euro will reduce the uncertainties and transaction costs that still hinder the decisions of economic agents. It will accentuate the transparency and the fluidity of markets. It will amplify the beneficial effects of the single market. Thus will a money for Europe contribute to an increase in our trade, our investment and, therefore, to growth and employment across Europe.

Yves-Thibault de Silguy
Member of the European Commission

Préface

Au début des années 80, l'Union européenne faisait face à de sévères difficultés économiques: faible compétitivité, chômage croissant. Les échanges entre États membres étaient encore freinés par de nombreux obstacles, ne permettant pas à l'économie européenne de tirer profit de son intégration progressive. C'est pourquoi il a été décidé, en 1985, de réaliser un grand marché intérieur: à la fin de 1992, toutes les barrières à la libre circulation des biens, des services, des capitaux et des personnes devaient être éliminées.

Quatre ans après cette date, ce vaste programme législatif est largement en place. Les entreprises ont accueilli très favorablement les changements introduits. Le marché intérieur est aujourd'hui l'une des réalisations les plus achevées de la construction européenne.

Forte de ces quelques années d'expérience, la Commission a conduit une étude économique approfondie sur les conséquences de cet ambitieux programme. Cette édition d'*Économie européenne* en présente les résultats détaillés.

Le marché unique est un vrai succès, et ce à plusieurs titres. En premier lieu, il a suscité une élévation du niveau de richesse de l'Union: on estime que le PIB communautaire est supérieur de plus de 1% à ce qu'il serait sans marché intérieur. De même, le nombre d'emplois est supérieur de 300 000 à 900 000 à ce qu'il serait autrement. À l'heure où le chômage est le problème politique le plus aigu en Europe, de tels chiffres montrent que l'intégration européenne donne déjà des résultats concrets et sensibles.

En second lieu, le marché intérieur a logiquement accru les échanges entre États membres, de l'ordre de 20 à 30%. De même, les investissements étrangers ont fortement augmenté: au début des années 90, l'Union a absorbé 44% des flux d'investissements étrangers mondiaux, ce qui prouve l'attrait de notre zone. Cette amélioration de notre compétitivité est un atout crucial dans une économie de plus en plus mondialisée.

Enfin, le marché intérieur a eu deux effets bénéfiques notables dans la perspective de l'union monétaire. Loin de conduire à une spécialisation des industries nationales, il a au contraire suscité un rapprochement des structures industrielles des États membres. En outre, il a permis d'accélérer le rattrapage des États membres les moins avancés. Il constitue donc un moteur de la convergence économique en Europe.

Demain, l'Union économique et monétaire apportera le complément nécessaire au bon fonctionnement du marché intérieur. L'euro réduira les incertitudes et les coûts de transaction qui pèsent encore sur les décisions des agents économiques. Il accentuera la transparence et la fluidité des marchés. Il amplifiera les effets bénéfiques du marché intérieur. La monnaie européenne contribuera ainsi à une augmentation de nos échanges, de nos investissements, donc de la croissance et de l'emploi en Europe.

Yves-Thibault de Silguy
Membre de la Commission européenne

Executive summary

1. Introduction

In the early 1980s, the European Union (EU) was suffering severe economic problems, including rising unemployment and poor competitiveness in high-tech activities. Diagnosis of the European malaise pointed to a central cause: market rigidities, responsible for the sluggish response of European economies in the 1970s and 1980s to rises in the oil price, globalization of the world economy and the information technology revolution. Rigidities pervaded all European markets, whether for products or production factors. Curing such 'Euro-sclerosis' required structural reforms aimed at enhancing market flexibility and reducing barriers to mobility within the EU.

Discussion within the Community on these problems culminated in the 1985 White Paper on completing the internal market, which spelled out a programme and a timetable for unifying European markets. It proposed that Member States abolish, by the end of 1992, all remaining barriers to the free circulation of goods, services, persons and capital (the four freedoms). The economic aim of the single market programme (SMP) was to implement structural changes designed to restore the capacity of the EU to generate growth and employment.

At the end of 1992, just as the single market was supposed to become reality, Member States charged the Commission in Council resolution 1218/92 with reporting before the end of 1996 on its overall effectiveness and impact. The relevant passage from the resolution invites the Commission

'to provide an overall analysis of the effectiveness of measures taken in creating the single market, taking particular account of promoting throughout the Community a harmonious and balanced development of economic activities, sustainable and non-inflationary growth respecting the environment, a high degree of convergence of economic performance, a high level of employment and of social protection, the raising of the standard of living and quality of life, economic and social cohesion and solidarity among Member States. This analysis could, in addition, consider the impact of improving the competitiveness of European business in world markets'.

In response to this invitation, the Commission is producing a number of related publications, each with a different function and all available from the Office for Official Publications of the European Communities (OPOCE). This edition of *European Economy* concentrates on assessing to the extent possible the economic impact of the single market so far. The other documents available are:

(i) Communication on 'The impact and effectiveness of the single market' [COM(96)520, 30 October 1996]

(ii) Monti Report (1996)

(iii) Commission Staff Working Paper, [SEC(96)2378, 16 December 1996]

(iv) individual background studies and business survey.

The scope of the SMP extends beyond the nearly 300 specific measures listed in the White Paper for removing physical, technical and fiscal barriers hindering trade and factor movements within the EU. It covers two additional areas, because the Community has always taken the view that the abolition of obstacles to the freedom of movement of goods, services, capital and persons is a necessary, but not sufficient, condition for a truly single market. The first of these two areas are the two particularly important flanking Community policies of competition policy and regional policy. There was a danger that completion of the single market would be accompanied by private or public measures aimed at reducing competition, such as cartels and State aids. This led to a strengthening of Community competition policy, especially in the domain of merger concentration with the adoption of the Merger Regulation in 1989. Similarly, the combination of the single market and the enlargement to Spain and Portugal in 1986 created the risk of reduced cohesion within the EU. To counter this possibility, an extension of Community regional policy, involving the doubling of structural funds, was enacted in 1989. The second area concerns a number of sectors (such as energy) which were not covered by the White Paper but have since become the target of liberalizing measures.

The first step in assessing the SMP's economic impact is to ask to what extent it has actually been implemented and is really effective in removing obstacles to the four freedoms. In terms of the White Paper alone, nearly 93% of the associated single market measures had been transposed into domestic legislation by mid-May 1996. Meanwhile, a survey of 20 000 enterprises around the Community by Eurostat on their perceptions of the impact of the SMP, provides generally positive responses, especially in the manufacturing sector. In other words, although problems remain which need to be tackled, the SMP is becoming a reality.

According to the most recent economic thinking, the SMP can be expected to produce three types of economic effects: allocation effects, accumulation effects and location effects. The first consists of the impact of integration on the static, short-run allocation of resources, i.e. on economic efficiency. The second effect encompasses the impact on the accumulation of productive factors and covers both medium and long-run growth effects. The third effect refers to the geographical allocation of resources across Member States and/or regions of the EU.

Previous analyses of the SMP focused entirely on allocation effects, adding to classical analysis on comparative advantage an innovative approach that highlighted economies of scale and

increased competition. The removal of barriers implied by the SMP was expected to produce an improved allocation of resources through the fuller exploitation of comparative advantage and specialization. In addition, in many sectors of the European economy the SMP was expected to improve efficiency by rationalizing of production associated with a fuller exploitation of scale economies. Great emphasis was laid on efficiency gains from economies of scale at the plant or firm level associated with the size of the EU market. However, as economies of scale inevitably lead to concentration in production, the potential impact of the SMP on competition was also emphasized. It indicated that the removal of barriers was likely to produce strong 'pro-competitive' effects, although it recognized also the need for a strong Community competition policy. Provided greater competition was obtained, the lower production costs associated with the efficiency gains from the SMP were to translate into lower consumption prices.

Clearly, the potential efficiency gains from the SMP require reallocation of resources within the EU: reallocation within and across firms, reallocation within and across sectors, and reallocation within and across regions or even Member States. Such reallocation may imply more or less adjustment costs depending on its nature and on the functioning of factor markets. As the Cecchini report (published in 1988 as an *ex ante* assessment of the cost of not having a single market) indicated: 'let there be no mistake, the [SMP] is a medium-term therapy; it will take time for its benefits to become apparent, and patience and political determination will be required if we are not to change course'.

The accumulation and location effects are likely to require a longer time span to materialize than the allocation effects. The SMP can boost accumulation, and thereby contribute to higher growth rates in the EU, in two manners. On one hand, the static, efficiency gains of the SMP translate into higher incomes, which may generate higher investment and raise growth in the medium term. On the other, the SMP could improve the benefits and reduce the costs of producing new innovations in the EU, which would boost growth in the long run. The SMP is also likely to affect the geographical distribution of production within the EU. The economic literature has noted that the degree of specialization in Europe is far below what is observed in the United States. Some ascribed this situation to the existence of trade barriers in Europe and predict, therefore, that the SMP could increase geographical specialization in the EU.

Related to the issues of growth and location is the question of the impact of the SMP on real convergence between the Member States and the regions of the EU. The expected effect of the SMP on convergence is complex. On the one hand, the SMP should favour convergence of per capita income levels across Member States via greater mobility of goods, services, capital and labour. On the other, increased geographical specialization could lead to increased polarization between richer and poorer countries or regions.

Earlier studies attempted to estimate the *ex ante*, potential economic effects of the SMP. The purpose of the present Report is to provide an evaluation of the *ex post*, actual effects. This is a challenging task for several reasons. Firstly, the period which has elapsed since the beginning of the SMP is extremely short. It is unreasonable to assume that economic operators integrated the SMP into their decisions before 1987 or even 1988. Furthermore, many of the measures were put in place recently. At the same time, much of the necessary statistical information is only available up to 1994 or even 1993. As a result, the period of analysis is in many instances too short to carry out a full evaluation of a structural transformation on the scale of the SMP. Secondly, the SMP is an extremely complex process: it has been implemented at varying speeds and intensity in different sectors and different Member States; it potentially affects the entire chain of most economic activities; and it removes different barriers to different extents. Lastly, the period of investigation has been an extremely eventful one for the global economy. Europe itself witnessed not only the implementation of the SMP, but also the enlargement of the EU to Spain and Portugal, German re-unification, and the economic transformation in Central and Eastern Europe. All this is against the background of a globalizing world economy and the information technology revolution. For all these reasons, the *ex post* economic evaluation of the SMP should be viewed as a highly tentative exercise.

2. SMP — Integration and welfare gains

According to economic literature, trade expansion is held to be welfare-increasing because less efficient domestic production is replaced by imports produced more efficiently. The SMP, by removing trade barriers between countries, was expected to expand trade among EU Member States and thereby improve welfare. There was clearly a possibility that increased trade amongst the Member States could be at the expense of trade with third countries or, on the other hand, that the SMP could have the effect of improving market access for third country imports into the EU market, thus to some extent reducing the welfare gains just discussed.

For the period between 1985 and 1995, the share of intra-EU imports in total manufacturing imports has increased on average by 6.7 percentage points from 61.2% in 1985 to 67.9% in 1995. For services during the same period 1985-95, the share of intra-EU imports in total services imports has increased on average by 3.1 percentage points from 46.9% in 1985 to 50.0% in 1995.

Intra-EU import penetration also increased significantly in the EU for manufacturing as a whole. However, there are significant differences amongst sectors within manufacturing. Intra-EU penetration ratios increased much more in the 15 manufacturing industries particularly sensitive to the SMP than

in the rest of the manufacturing sectors. Econometric assessment provides clear evidence on the direct effect of the SMP on intra-EU trade flows. It shows that the SMP has created trade within the EU. Direct and pro-competitive effects of the SMP on trade explain 80% of the change in the market share of intra-EU imports. Such effects are also higher the higher the sensitivity of the sectors to the SMP.

The SMP has also led to external liberalization towards non-EU countries, because market access is easier with a single system. Concerns about the SMP creating a 'Fortress Europe' have proved to be unfounded. There is no evidence at all in the studies that increased intra-EU trade has been at the expense of trade with non-EU countries. The overall estimated impact of the SMP accounts for 70% of the observed change in the market share of extra-EU imports. Again, the impact of the SMP is larger the higher the sectoral sensitivity to the SMP.

Foreign direct investment (FDI) can take the form of 'greenfield' investment (establishing a new company from scratch) and cross-border mergers and acquisitions of existing firms. Trade and FDI are different ways of supplying international markets. Multinational companies are the main source of FDI flows, and the sales of multinational foreign affiliates are now by some estimates worth double the value of world exports.

The expected impact of the SMP on foreign direct investment is ambiguous. On one hand, because the single market lowers cross-border trade costs, it could increase trade relative to FDI. Conversely, for Member States whose locational advantages are significantly improved by the SMP (because of market integration and the dynamic impact on economic growth), FDI will increase relative to trade.

In fact, the SMP impact on FDI seems to have been even more positive than its impact on trade. The European Union absorbed 44.4% of FDI inflows from all countries in the world at the beginning of the 1990s, compared to 28.2% in the period 1982-87. Moreover, the intra-EU FDI has increased four times faster than intra-EU trade in the period 1984-92.

A study based on a model which tries to explain the geographic distribution of FDI outflows from the largest EU Member States suggests that the SMP has had very substantial positive effects on their FDI flows to the rest of the EU; results which are confirmed by another study using a different methodology. Between 1984-85 and 1992-93, EU FDI inflows from all sources increased five-fold (seven-fold for intra-EU inflows, i.e., flows between Member States).

3. Specialization, adjustment costs and location

3.1. Trade, specialization and adjustment costs

Originally, the common market consisted of six Member States with roughly comparable industrial structures, productivity or capital/labour ratios. Entry of the southern European countries to the EU brought partners for integration in intra-Community trade with quite different industrial structures and productivity levels. These southern Member States, with low labour costs and relatively high capital costs, specialized in industries with a commensurately high labour content but low technology and skill content. The northern Member States, with high labour costs and relatively low capital costs, specialized in industries with a high technology, capital and skilled labour content.

The effects of the SMP and economic integration on trade are complex. In the traditional analysis of international trade, the SMP should lead to greater specialization by countries on the basis of their respective comparative advantages. The SMP would, in that case, favour an increase of inter-industrial trade with each Member State specializing primarily in the sectors where it is relatively efficient. However, if we take into account economies of scale, imperfect competition and product differentiation, the SMP could increase intra-industry trade, the simultaneous import and export of similar product lines between Member States (e.g. cars for cars).

The gains from economic integration differ between these two modalities (inter-industry trade and intra-industry trade). Inter-industry trade between different countries carries efficiency gains, with each country specializing in those activities in which it is relatively more efficient, and consumers benefit from lower prices as a consequence. However, this implies a deeper specialization between Member States, each country experiencing a contraction of some of its sectors and expansion of others (e.g., clothing vanishing in high-labour-cost countries, and high-tech in low-skill ones).

By contrast, intra-industry trade benefits the consumer by leading to a much wider variety of products, whilst producers face lower adjustment costs. Here, adjustments take place amongst firms inside industries rather than among industries. As Member States' industrial structures remain roughly similar, the EU becomes more diversified and is therefore less vulnerable to sector-specific shocks (e.g., increases in the price of oil, etc.). The effect of a shock does not vary by Member State (no asymmetric shocks). This is particularly important, of course, within a monetary union.

At the beginning of the 1980s, most trade within the Community could be classified as inter-industry[1] corresponding to specialization based on comparative advantages (around 45% of total manufacturing trade), but this started to decline in the mid-1980s. The preparation phase of the single market was

[1] We have inter-industry trade between two countries when one country's trade flow (import or export) with the other in a sector represents less than 10% of the other country's trade flow (import or export) with it in the same sector.

accompanied by a decrease in the share of inter-industry trade in Europe and a rise in intra-industry trade. However, intra-industry trade can be further subdifferentiated: either intra-industry trade in similar products in terms of prices and quality or intra-industry trade in products differentiated by price and quality (for example, one country exporting brand-name expensive shirts and the other inexpensive low quality shirts). The rise in intra-industry trade has predominantly been the latter type (from less than 35% of total manufacturing trade in 1985 to more than 42% in 1994), whilst intra-industry trade in similar products[1] remained rather stable (around 20% of total intra-EU manufacturing trade). The SMP has therefore increased the range of products available to consumers in terms of prices and quality, and encouraged differing business strategies: either emphasising design, Research & Development, and advertizing in some cases (high price-quality) or production cost-minimizing in others.

The increase of intra-industry trade in price differentiated products implies larger adjustment costs than intra-industry trade in similar products, but still much lower adjustment costs than an increase in inter-industry trade would have produced. Its benefits are a much wider range of products in terms of prices and quality for consumers, as well as efficiency gains due to specialization on the basis of relative comparative advantages within sectors (innovation, design, distribution).

3.1.1. The country dimension

In the period 1985-94, all EU countries experienced a decrease in inter-industry trade, in particular Spain, UK, France and Germany. Nevertheless, in 1994, inter-industry trade corresponding to specialization based on comparative advantages still accounted for over 58% of Greece, Portugal, Ireland and Denmark's total manufacturing trade. At the same time, conversely, intra-industry trade in price-quality differentiated products represented over 42% of total trade for the UK, Germany, France, Belgium, Luxembourg and the Netherlands, a share which grew between 1987 and 1994 for all this group of countries plus Spain and Portugal.

Analysis of price quality differentiated intra-industry trade shows a striking difference between northern and southern countries. Scrutiny of the contribution to the trade balance of low, medium and high-price quality product ranges highlights different country groupings. Germany has a comparative advantage in high-price quality product ranges, France in medium to high-price quality ranges, the United Kingdom, the Netherlands, Belgium, Luxembourg and Denmark in medium-price quality ranges, Spain in medium to low-price quality ranges, and Greece and Portugal in low-price quality ranges. These specializations have been unaffected by monetary fluctuations.

In the period 1985-94, the share of medium-price quality products in overall intra-EU trade has declined (by some 10 points) in favour of high-price quality products (plus 7 points) and low-price quality products. This is especially so for the most advanced European economies. However, also for southern Member States, specialization has changed and the share of low-price quality products generally has fallen whilst the share of high-price quality products has increased.

The SMP has therefore contributed directly, via the removal of border formalities and reduction of cross-border transportation costs, and indirectly, via growing income convergence between EU Member States, to a growing share of intra-industry trade.

Growing intra-industry trade with price differentiation implies that Member States are more and more specialized inside industries on products with differing price level ranges, importing low-price quality ranges and exporting high ones, or vice versa. Of course, the situation could differ for different sectors: one country could import high-quality clothing and export high-quality cars. For most advanced countries such an evolution implies growing intangible investment in R&D, training, innovations to compete in traditional mature industries, and for less advanced countries, the possibility of entering high tech and high value added sectors and competing on price.

3.1.2. The sectoral dimension

However, manufacturing sectors are not all comparable in terms of the nature of trade (intra versus inter-industry trade) and therefore in terms of adjustment costs and efficiency gains resulting from the SMP.

In terms of inter versus intra-industry trade, manufacturing sectors can be broadly divided into two groups: firstly, in food and beverages, mining, textiles and non-metallic minerals, trade is mainly inter industrial. These sectors represent about one third of total manufacturing value added. Secondly, in non-electrical machinery, professional goods, electrical machinery, motor vehicles, chemicals, wood and paper, trade is mainly intra industry differentiated by price and quality. These sectors represent about two thirds of total manufacturing value added.

In general, for all sectors between 1985 and 1994 intra-industry trade in price quality differentiated products increased whilst inter-industry trade decreased. In particular, for sectors traditionally characterized by high inter-industry trade, the implementation of the single market is characterized by a steady increase of intra-industry trade, notably due to an increase of trade in price quality differentiated products (food and textiles).

[1] We have intra-industry trade in similar products when export and import unit values differ by less than 15% and we have intra-industry trade in differentiated products when unit values differ by more than 15%.

3.2. FDI, specialization and adjustment costs

FDI (whether 'greenfield' or M&A) can raise welfare in aggregate terms. For the destination country, the foreign affiliates may provide new products and processes, methods of superior management and so on. For the source country, domestic multinationals will only invest abroad rather than supplying overseas markets from local plants through exports if the decision is expected to be beneficial to profits and efficiency-enhancing.

With the removal of market fragmentation and the dynamic impact on economic growth of the SMP, FDI will increase relative to trade to Member States whose relative locational advantages are significantly improved by the SMP.

3.2.1. The country dimension

The impact on the domestic economy of FDI (FDI inflows to GDP) differs widely amongst Member States. At the beginning of the 1990s, annual Irish FDI inflows were worth over 9% of GDP. In Belgium and Luxembourg, the ratio was 4.7% a year. The Netherlands (2.7%) came third, then Portugal (2.6%), the UK (1.8%) and Spain (nearly 1.8%). By contrast, in Germany (less than 0.4%), Italy (0.4%) and Greece (0.6%) these figures were very low. Over the period 1986-93, two Member States (Belgium and Ireland) gained considerable ground in terms of attractiveness as locations for FDI. Taxation also plays an important role in this.

As hosts for FDI from other EU countries, Belgium/Luxembourg and France have become increasingly important since 1986, so that each absorbed some 18% of total intra-EU FDI in the period 1992-93. Whilst the UK share of FDI from other EU countries has declined (9% of total intra-EU FDI in 1991-93) over the period 1986-93, for extra EU FDI, however, the UK dominates (37% of total extra EU FDI), with France second, receiving 16% over the period 1990-93.

The extent and direction of the SMP impact on FDI in the EU Member States has been estimated using different approaches (a 'gravity' model and an econometric assessment). The results of the studies are consistent. For example, the results suggest that the SMP may have raised the constant price stock of UK investment in the EU by some USD15 billion as of 1992, around 31% of the UK's aggregate stock at that time.

3.2.2. The sectoral dimension

For sectors subject to technical economies of scale, the SMP will lead to relatively more trade than FDI, because economies of scale due to concentrating production at a single plant tend to discourage dispersed production. However, for sectors characterized by knowledge-based assets, FDI will increase relative to trade (better approach and access to consumers in particular, importance of after sale services, and to facilitate the deployment of technological assets).

The ratio of intra-EU trade divided by FDI flows has fallen substantially during the period of the SMP, from 240 in 1984-86 to 61 in 1990-92 for manufacturing industries. This decline, corresponding to an increased importance of FDI relative to trade flows, was most marked in the food sector, a sector where knowledge-based assets are typically important (differences in tastes, importance of advertising). The food sector is also the one which has increased most in terms of the share of total manufacturing intra-EU FDI (from around 10% in 1984-86 to 22% in 1990-92).

The sectoral breakdown of inward FDI flows may reflect the comparative advantages of different Member States. In northern Member States, cross-border manufacturing M&A activity is mainly in technology intensive sectors (engineering, transport equipment, machinery) whilst in southern Member States, cross-border M&A activity is mainly in relatively basic products (textiles, clothing, timber and wooden furniture).

However, the bulk of FDI to the EU as a whole is targeted at the service sectors. In the 1980s, 63% of FDI cumulative inflows went to service sectors, whilst only 31% went to manufacturing sectors. This partially reflects the fact that service sectors are the largest and fastest growing part of advanced economies, but also that service sectors are generally less tradable than manufacturing sectors (so FDI tends to be the only way to supply foreign markets), that they are characterized by significant firm specific assets and by the importance of proximity with consumers. Of the estimated increase of UK and German FDI stocks in other EU Member States due to the SMP, the largest gains have been in financial services. Of course, services may also have been the most affected by the SMP because of the hitherto high level of barriers which the SMP has been systematically removing.

3.3. The location issue

One question is whether the SMP has induced more concentration of EU industry around an industrial core (which can be central or peripheral in terms of geography) or a more even dispersion amongst the Member States. Such evolution is not expected to affect all industrial sectors in the same way. Economic integration entails, in principle, a concentration of industries characterized by economies of scale in the economic core region and therefore, for those sectors, a decline in intra-industry trade. As has already been said, however, manufacturing as a whole inside the Community has actually experienced an increase in intra-industry trade, with Member States trading in products from the same industries differentiated by price and quality. This implies that countries broadly produce the same type of goods, but with different price-quality characteristics. In other words, a process of

specialization is occurring, but within industries. Nevertheless, for a limited number of sectors with large potential scale economies, a certain concentration may still develop in the future.

The process of industrial specialization inside the EU on the basis of price and quality differences has certain consequences for the cohesion and convergence of richer and poorer Member States, an issue which is treated in point 5 below.

4. Efficiency and competition effects of the SMP

Much of the beneficial effects of the SMP for the European economy should result from competitive forces unleashed by integration. The *ex-ante* analysis of the impact of the SMP forecast substantial gains for the European economy from increased efficiency, with lower costs and prices, and increased product variety. The main channels through which these benefits were to be reaped throughout the economy were the exploitation of scale economies by firms, and increased competition.

As argued below, the European economy has indeed benefited from gains in efficiency and competition due to the SMP. These gains have been possible to a large extent thanks to a substantial restructuring of European industries, even if the specific forms in which the SMP has spread through the economy do not always exactly coincide with what was forecast in advance. In particular, cost reductions related to size achieved over the period 1985-93 have been mostly the result of exploiting scale advantages linked to fixed investments in marketing, brand development, R&D spending and development of new production processes. Few efficiency improvements have been the consequence of exploiting purely technical efficiency gains related to the size of establishments.

4.1. Changes in the structure of European industries

The removal of barriers due to the SMP has affected the structure of both trade and production. The previous section highlighted important changes in trade and investment flows between Member States. In this section, we look at the shifts in domestic production and market structure that accompany such changes.

4.1.1. Mergers and acquisitions

In recent years, the EU has witnessed rapid growth in mergers and acquisitions (M&As) activity. This growth has been particularly strong in cross-border activity, which is one of the main components of the wave of FDI analysed above. However, the bulk of M&A operations are still overwhelmingly domestic, indicating that the restructuring has taken place, at least initially, through changes to domestic market structures.

For the EUR 15 over the period 1990-95, more than 70% of all operations were domestic, a proportion which was roughly the same over the period 1986-90.

The domestic nature of the restructuring process is especially significant in countries such as Germany, Spain and Italy and, in general, it is a feature of the largest economies in the Union. Small open economies in the Union tend to have a larger share of cross-border M&As. This is particularly true for Austria and Ireland. As mentioned before, cross-border M&As are increasingly Community M&As (18.7% between 1990 and 1995). Operations involving firms from the rest of the world continue, however, to be important for countries such as the UK, Ireland, Sweden and Austria.

The extent of industry restructuring that has taken place over the SMP implementation period varies by Member State. This may be due to differential effects of the SMP, but to a large extent it is related to national differences in financial and regulatory systems. Amongst the largest economies in the Union, restructuring via M&As has been especially important in the UK, whilst Italy and Spain have registered rather low levels of operations when compared to the importance of their economies.

Interestingly, companies from the Nordic countries, the Netherlands, France and the UK have predominantly taken the bidding role in the M&A process. Conversely, companies in countries such as Italy, Spain and Germany have usually been the targets of acquisitions.

At the sectoral level, restructuring has taken place both in manufacturing and in services. Manufacturing was the more active target over the period 1988-92, possibly even in anticipation of the removal of barriers by the SMP; in the latter period, 1993-95, services have taken the lead, in accordance with the delayed introduction of SMP measures in these sectors. Between 1986 and 1995 the number of operations has grown from 720 to 2 296 in manufacturing, and from 783 to 2 602 in services.

The importance of domestic operations in the M&As process is particularly significant in the case of services, where institutional restrictions may have prevented the extent of intra-European cross-border operations which has been observed in manufacturing. In 1995, 70% of all deals were domestic in services, and the figure was 63.5% in manufacturing. Incomplete adoption of SMP regulations in services could therefore prevent some beneficial cross-border restructuring (for example, in the banking and transportation sectors).

M&As have allowed both external firm growth and internal restructuring as demanded by the new post-SMP scenario. Next, we review how this has translated into changes in market structure and efficiency.

4.1.2. *Concentration*

In manufacturing, restructuring has led to significant increases in the concentration of European industry. For industry on average, the share of total sales by the four leading firms increased from 20.5 to 22.8% between 1987 and 1993, although in France, Belgium and the UK, domestic concentration actually decreased. Only Germany over this period experienced a tendency towards increasingly concentrated industries. Such a tendency is at the root of the increasing gap between the average size of manufacturing firms in Germany and the size of firms elsewhere in the EU.

Many industries have experienced increases in concentration exceeding five percentage points. The most significant increases have taken place in industries related to public procurement, (in telecommunications — wires and cables, transmission equipment — or transportation — aerospace, rail stock), in food sectors sensitive to the SMP (pasta, starch, oils and fats) and in other sectors such as electrical machinery, domestic electrical appliances and measurement equipment.

Overall, the trend towards increasing concentration at the EU level is especially significant in technologically intensive industries. These are industries which were particularly sensitive to the SMP, and where the efficiency gains from an enlargement of market size and an increase in scale are both particularly important and seem to have been reaped by the sectors' leading firms.

In industries where advertising, brand name and marketing are important (such as mass consumer goods like food products, consumer chemicals, consumer electronics and motor vehicles), the increase in EU wide concentration is more moderate, and fundamentally at the national level, suggesting the predominance of domestic restructuring. This is consistent with the industries' characteristics where the diversity of preferences and distribution channels across the EU might still be partially segmenting national markets. Leading firms do deploy their marketing skills Europe-wide, but most of the increased concentration is the result of increasingly concentrated domestic markets. In this type of industry, the average share of the four leading firms went up on average between 1986 and 1992 by 2.9 percentage points in Germany, 1.3 points in France and 3.2 points in the UK.

The impact of the SMP on concentration in market services has been very much affected by the nature of each service. Sectors such as distribution and road freight transport — which were very sensitive to the SMP (by virtue of direct regulations or indirectly as in the case of distribution) but now face relatively light regulation — have registered substantial restructuring, involving both domestic and EU increases in concentration. The improved efficiency of these sectors has had a significant effect upstream on manufacturing industries and downstream on final consumers, to the extent that significant cost reductions in distribution have been achieved (see below).

In road freight transport, the industry has segmented with an increase in both large and small specialized competitors, but a declining share for intermediate firms. In distribution, increased EU-wide concentration by manufacturers and retailers has reduced wholesalers' market share. New firms providing logistic services throughout the distribution chain have gained substantial ground in the industry.

Highly regulated services, with large potential gains from scope and network economies (economies tied to the simultaneous exploitation of several businesses or a distribution network) such as telecommunications, airlines or retail banking, have observed smaller increases in EU-wide concentration. Quite often, due to institutional constraints, the benefits that can be derived from a wider EU market have been exploited by alliances and not M&As. Increased concentration has been observed only at the domestic level, selectively and very much depending on the extent to which some of these sectors had restrictions on entry before the implementation of the SMP, (i.e. the market share of the leading firms has increased slightly in banking, but declined in airlines and telecommunication services, where entry regulations had artificially kept concentration ratios high).

4.1.3. *Firm size and efficiency*

According to previous analyses, the SMP was greatly expected to improve efficiency by making it possible and worthwhile to exploit previously unexploited economies of scale, thereby producing an increase in plant size. There is no empirical evidence so far in support of this view. The available empirical evidence indicates that firm size has increased, not however in sectors sensitive to SMP.

Data on the distribution of firms by size, however, is not gathered on a consistent and timely basis, and even simple information on average firm size is only available after a considerable delay. In any case, average firm size is an indicator to be interpreted with great caution.

One of the remarkable facts of the European manufacturing sector is the significant difference between average firm size in Germany, and other countries such as France or the UK. In 1985, gross value added per firm in Germany was ECU 7.4 million (1990 prices), a third higher than in the other two countries. The data show that manufacturing firm size in the largest EU countries increased between 1985 and 1992 by between 8% in France and 15% in Germany and Italy. The overall period increase was 11% for the four countries (D, F, I, UK). Amongst them, the UK did not experience an increase in firm size.

This means that after the implementation of the SMP, this structural characteristic of the European manufacturing sector has remained unaltered. If anything it has been reinforced given the comparatively weak growth of firm size in France and, in particular, the UK, compared to Germany.

At the sectoral level, the large size of German firms is particularly significant in motor vehicles, chemicals and engineering industries, but also in more traditional industries such as textiles and timber. Over the SMP's implementation period, the size gap between Germany and the other countries has increased in sectors such as office machinery, measurement equipment and transportation equipment; but also in the food, textile and clothing industries.

However, the SMP does not seem to have had a differential effect in terms of its impact on firm size across sectors. The strongest growth in firm size has actually been in the set of industries which were not SMP-sensitive. Sectors where the SMP was supposed to have a stronger impact already had a larger firm size on average, and growth has lagged behind.

Changes in firm size have therefore not been fundamentally linked to the impact of the SMP, but rather to the nature of competition in each industry. Strong growth of the average size of firms has been detected in advertising-intensive industries in Germany, France, Italy and the UK. This trend is consistent with the data on national concentration and confirms that in these industries firms are increasing their size, so as to reap dynamic scale economies linked to the creation of strong brand names, new product development and heavy up-front advertising investments.

The performance of sectors where R&D is important has not been as impressive in terms of the size of the average firm but nevertheless, as argued above, the data on concentration does indicate that R&D intensive industries have taken advantage of an EU-wide market and spread across the Community their large up-front fixed costs. Moreover, the firm size indicator is particularly inappropriate in this kind of sector, which is subject to entry by new innovative firms and which tends to diminish the observed average firm size.

In sectors where scale economies are linked to establishment size (technical or engineering economies) we also observe an increase in the average size of firms. However, there is no systematic evidence yet that firms have indeed profited from the SMP by reorganizing production across Europe and increasing the size of their establishments.

The efficiency gains associated with implementation of the SMP in manufacturing have also been confirmed by firms' perceptions, as reflected in the Eurostat business survey. Overall, the survey records more positive than negative responses about cost reductions, especially when stratified by enterprise size. Large firms appear to have benefited most from unit cost reductions associated with the SMP. According to the survey, the gains in terms of lower unit costs were mostly due to reductions in raw materials costs (new sourcing opportunities), the costs of operations and distribution costs.

Efficiency gains in service sectors associated with the SMP have been harder to detect due to the nature of service activities and the problem of measuring outputs and inputs in these sectors.

In sectors such as distribution and road freight transport, some indicators show remarkable productivity gains. For example, improvements in the distribution sector over the period 1987-93 led to logistic costs declining as a proportion of total revenue for a large sample of 1 000 European large firms by 30%. Other gains have been a reduction in the number of days between order placement and shipment receipt (from 21 to 15 days) and an increased quality of service (a decline of 31% in the service failure rate). In road freight transport, the SMP has reduced the cost of cross-border transport by an estimated 6%. However, the harmonization requirements imposed on this sector by the SMP have also led to cost increases for international transport ranging between 1% and 2.5%.

Productivity and efficiency gains in the more regulated sectors (telecommunications, banking, airlines) have been less pronounced and, in general, it is uncertain whether the observed changes can be linked to the SMP. Large gains have been observed only in liberalized telecommunication services. In this case, the SMP has indeed promoted rapid technological change (for example, in cellular telephony through the adoption of the GSM standard) which is the main source of efficiency gains in such a dynamic sector. In airlines and banking the evidence is less comforting. For airlines, labour productivity has increased ahead of labour costs, although this is basically due to the reduction of the labour force directly employed by airlines. In banking, no significant improvements in productivity or efficiency are reported. Staff costs in banking have declined but these reductions may have been compensated by increases in non-staff costs related to investments in information technology. These trends, however, do not appear to be the direct result of the SMP measures adopted in the area of banking.

4.2. Competitive conditions in European markets

The promotion of active competition is particularly important because, as described above, the European economy has undergone a process of increased industrial concentration as a result of the SMP. Such an increase in concentration and firm size could result in reduced economic welfare were it to stifle competition. However, evidence on price-cost margins and business perceptions seems to indicate that the efficiency gains associated with large size have been passed on to consumers

and users thanks to increased competition associated with the SMP.

Implementation of the SMP has had a significant positive effect on the degree of competition in manufacturing sectors. Over the period 1980-92, European manufacturing industry registered a trend recovery of price-cost margins, at a yearly rate of about 2%, controlling for the evolution of the economic cycle and the diverging industrial structures of the EU Member States. Within this overall trend, the statistical analysis of price-cost margins confirms that implementation of the SMP imposed increasing pressure on price-cost margins, thus ensuring that cost reductions have been passed on to consumers and downstream users. The data indicate that the SMP has led to a significant reduction of price-cost margins, with a yearly 1% reduction in margins as of 1986/7. That is, in the absence of the SMP, margins would have grown faster over the period. The relative decline in margins triggered by the SMP has been particularly important in some of the manufacturing sectors most sensitive to the SMP. Namely, industries in high tech public procurement sectors (i.e. office machinery) and sectors which had moderate non-tariff barriers before the SMP (consumer electronics, motor vehicles, textiles and clothing). The effect on other SMP-sensitive sectors (traditional or regulated public procurement markets such as pharmaceutical products, electrical equipment, etc.) does not appear to have been significant.

The increased competitive pressure revealed by margins data is confirmed by the perceptions of firms reflected in the Eurostat business survey.

Competitive conditions in services have also been significantly altered by the SMP. A significant increase in competition is noticeable in sectors such as telecommunication services or retail banking, but also in airlines, where implementation of the SMP has only been partial so far. Overall, however, the increase in competition seems to be less strong than in manufacturing sectors, reflecting that many regulations are still maintained on services and that the SMP has not been fully implemented in several domains. This difference in the reaction of manufacturing and services is also consistent with the results obtained by the business survey. Business perceptions also indicate that the increased competitive pressures in services is mostly due to the behaviour of domestic competitors, which is in tune with the predominantly domestic nature of restructuring due to the SMP (highlighted above in the analysis of M&As).

The change in the degree of competition in services has been prompted by new entry in certain markets (telecommunications, airlines) but also by the elimination of conduct regulations which restricted firms' marketing strategies (airlines, banking).

Increased competition has resulted in substantial and quite general reductions in prices in sectors such as telecommunications, and a more selective decline of prices in segments of the airline and banking industries. In airlines, margins in real terms declined by almost 20% between 1986 and 1994. In banking, intermediation margins have also declined, reflecting increased competition in some segments of conventional retail banking markets (i.e. high-yield cheque accounts, etc.). Prices have declined for selected products such as credit cards, corporate loans and some deposit products in most EU countries.

In road freight transport, the margins for cross-border traffic have declined sharply over the period 1986-94. The result has been a reduction in real transportation prices which, together with efficiency gains in the distribution sectors, have led to substantial changes in the sourcing patterns of manufacturing and retailing firms. A wider range of sourcing possibilities explains the decline in input costs, one of the key components of costs reduction due to the SMP as reported in the business survey results.

Finally, competition in some service sectors has been distorted by the existence of restrictions which have prevented market adjustment. State aids and other government interventions or regulations have prevented the complete restructuring of some industries — such as airlines or banking — to face the new competitive environment created by the SMP.

The pro-competitive impact of the SMP has expanded beyond the sectors which were targeted by SMP measures. Through market interactions and strategic reactions by firms, changes in competitive conditions in one sector have spilt over to related sectors, such as clients or suppliers. For example, SMP-driven changes in the glass sector have led to upstream restructuring in the soda ash industry; similarly, the liberalization of telecom services has had a profound impact on the telecommunications equipment market. This spreading of the SMP effect means that the linkage between SMP sectoral sensitivity and changes in performance — for example, prices — is not simple, since many non-sensitive sectors end up being affected by the SMP.

Conversely, the pro-competitive impact of the SMP may have been dampened by the behaviour of firms and/or governments. In the case of firms, it could help explain the *de facto* limited changes following the liberalization of public procurement markets. In the case of governments, State aids still play a role in certain sectors. Note also that these markets have registered remarkable increases in concentration and firm size through a process of mergers and acquisitions, and only limited declines in price-cost margins.

4.3. Price convergence across the European Union

The changes in structures and the degree of competition of European markets prompted by the implementation of the SMP have also resulted in increased price convergence across the EU

between 1985 and 1995. For certain goods, no additional convergence of prices is expected, as existing levels of price dispersion are the result of structural sectoral characteristics fully compatible with the achievement of an integrated pan-European market, such as differences in taste and culture, in income levels, etc.

Most price convergence is observed in consumer and equipment goods, particularly those that are highly traded within the EU and with the rest of the world. Convergence in consumer goods has been accelerated by the SMP. In 1993, within the EU 12, the price variation[1] (including taxes) of identical products and services in different Member States were: 19.6% for consumer goods, 28.6% for services, respectively down from 22.5% and 33.7% in 1985. However, energy and construction price variations respectively increased from 21.1 and 22.1% in 1985 to 31.7 and 27.4% in 1993.

In services, price convergence is also observed and has been accelerated by the SMP, although less convergence is to be expected in non-tradable services as the degree of price dispersion is basically correlated with the dispersion of incomes per capita. No convergence is observed, however, for energy and construction.

Taxation (in particular, excise duties) and regulatory intervention are significant determinants of exceptionally high levels of price dispersion. This is observed, for example, in sectors such as energy and — for manufactured goods — in sectors related to the health care industry. These sectors have not been affected by implementation of the SMP.

Finally, price convergence has been faster in the Member States which joined the Community after 1980.

The increased convergence of prices for many products and services across the EU corresponds, at the detailed microeconomic level, to the process of convergence in inflation (disinflation) achieved in the EU over the last few years. The SMP effect on prices has thus facilitated the conduct of a stability oriented macroeconomic policy.

5. Income, employment and convergence

5.1. Income and employment

The previous sections supplied an analysis of the main channels through which the SMP impacted on different segments of the European economy. This mostly microeconomic analysis produced many interesting pieces which provide evidence about the changes to the EU economy set in motion by the SMP. In the present section, we attempt to put together these different pieces so as to furnish a coherent *ex-post* quantitative macroeconomic assessment of the SMP.

Providing an *ex-post* quantitative macroeconomic assessment of the SMP is a perilous task due to methodological difficulties. Quantification of the SMP effect raises the *anti-monde* problem, i.e. estimating what the world would have looked like in the absence of the SMP. Two types of models can be used for simulating the *anti-monde*, each with its own advantages and disadvantages: macro models and computable general equilibrium (CGE) models. Another methodological problem relates to the fact that the use of simulated models (regardless of whether they belong to the macro or CGE variety) for assessing a regime change like the SMP suffers from the inherent difficulty of incorporating such change in the model. Therefore, the assessment provided in this section should be viewed more as a check on the coherence of the messages contained in the previous chapters, than as an attempt to quantitatively estimate the macroeconomic impact of the SMP.

Two models were used for the *ex-post* quantitative macroeconomic assessment of the SMP: GEM-E3-IM, a multicountry, multisectoral dynamic CGE model; and QUEST II, a multicountry dynamic macro model. The *anti-monde* produced by the CGE model is based on three sets of parameter change. It is assumed that in the absence of the SMP: (1) all SMP barriers would be reintroduced, thus raising trade costs; (2) the degree of competition (reflected in the degree of market integration) would be reduced, implying a reduction in the elasticity of substitution between EU and domestic products from a range of 3 to 6 to a range of 1.5 to 2; and (3) total factor productivity (TFP) growth would be permanently reduced by one tenth of a percentage point. On the other hand, the macro model's *anti-monde* simulation is based on two sets of parameter change. In the absence of the SMP: (1) the degree of competition would be reduced, as reflected by a permanent increase in mark-ups (the increase reaching half of a percentage point after five years; and (2) TFP growth would be permanently reduced by one tenth of a percentage point.

Based on these assumptions, the CGE model estimates that the level of EU GDP in 1994 was 1.1% above the level that would have prevailed in the absence of the SMP. The similar estimate based on the macro model is 1.5%. Given that, in 1994, the level of GDP for the EU 12 was around ECU 5 500 billion, these estimates imply that the SMP produced, by 1994, a gain of GDP in the range ECU 60 billion to ECU 80 billion.

Where do the gains come from? The two main components are the increase in competition/efficiency and the rise in total factor productivity, each accounting for about half of the total effect. The elimination of trade barriers reduces the degree of segmentation of national markets, thereby increasing the degree

[1] In fact, the measure used is the coefficient of price variation (including taxes), but the point is still the same.

of competition, which leads firms to increase their level of output. The result is also a decrease in costs and in prices, with a decrease in price-cost margins. This is the allocation or efficiency gain which puts the economy on a higher trajectory, albeit at the same growth rate as in the absence of the SMP. On the other hand, the rise in TFP, associated with a decline of X-inefficiency prompted by greater competition, induces a higher growth rate of GDP (the increment being of 0.1%).

The CGE model and the macro model also compute the impact of the SMP on employment. The former estimates that the EU employment level in 1994 was about 300 000 units above the level that would have prevailed in the absence of the SMP. The latter estimates the impact at around 900 000 additional jobs. Further analysis of the impact of the SMP on employment was undertaken with the help of a multiregion, multisectoral econometric input-output model of the EU 12. The model includes intra- and extra-EU trade equations which have been re-estimated to account for the SMP. The *anti-monde* simulation produced by this model is based on trade equations reflecting the absence of the SMP. The model estimates that the level of employment in 1993 was 600 000 units above the level that would have prevailed in the absence of the SMP.

In conclusion, the impact of the SMP on income and employment obtained up to now is far from being negligible. There is little doubt that the effects will continue to grow as the SMP is further implemented and economic agents adjust to the new competitive environment of the European economy.

5.2. Convergence

The expected effect of the SMP on convergence within the EU is complex. On one hand, the SMP should favour convergence of per capita income levels across Member States via greater mobility of goods, services, capital and labour. On the other, increased geographical specialization could lead to increased polarization between richer and poorer countries or regions.

Within the EU 12, analysis of the performance of Member States grouped by their date of entry into the EU provides useful insights. In terms of gross value added (GVA), the EU 6 and the EU 9 performed much the same as the EU 12 as a whole, but the new entrants, Spain, Portugal and Greece, saw a larger relative improvement, their overall GVA in 1993 being nearly 7% higher than it would have been had pre-1987 growth trends continued. These three countries plus Ireland form the group of the so-called 'cohesion countries'. The performance of this group is even more striking, with an improvement of nearly 9.5% in 1993 relative to an extrapolation of pre-1987 trends. This reflects the rapid growth of the Irish economy since 1987. With an average growth rate of about 8.5% per annum post-1987, compared with 2.7% per annum in the period up to 1987, Ireland's GVA in 1993 was about 40% higher than it would have been if its economy had continued to grow at the pre-1987 rate. Examining GVA per capita, the comparison of actual and extrapolated levels ceases to be positive for the original EU 6 and EU 9, but the improved performance of the new entrants and the cohesion countries is even higher.

Statistical analysis confirms that Ireland, Portugal and Spain have had above average growth, and have therefore converged after 1987. Among the poorer parts of the Community, only southern Italy and Greece have performed relatively worse after the SMP than before. The analysis gives some support for the fact that the SMP, in general, has contributed to these trends. However, in the case of Spain and Portugal, accession to the EU may have played an even larger role.

On a regional level, there are some indications that the convergence process has been Community-wide rather than concentrated in a few Member States. Country-specific influences remain important but, taking into account differences between Member States, the speed of convergence of the regions is broadly similar. The question here is to what extent convergence is due to the SMP or to structural funds support (including the capacity of each Member State to manage these efficiently). Given that the launch of the SMP was accompanied by a significant Community regional policy package which ensured large flows of structural funds to the less developed regions, it is useful to try to distinguish the effects of structural funds spending on the favourable growth performance post 1987 from the SMP effects. Econometric analysis shows that variances in structural fund spending per capita did not have a significant effect on regional growth variations. *Anti-monde* macroeconomic model simulations on the other hand, indicate some positive short-term demand effects for the four cohesion countries; positive supply side effects of a more permanent nature do not seem to have materialized yet.

The favourable impact of the SMP on the group of cohesion countries seems to be largely influenced by the exemplary performance of Ireland and, to a lesser degree, Portugal. Foreign direct investment and, in the case of Ireland, new greenfield investment by multinational corporations established since the early 1980s, have been among the major factors behind the above-average growth performance in these countries.

Chapter 1 — Introduction

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Introduction

1.1. Why review the single market programme (SMP)?

This review of the single market programme is being carried out by the Commission on the instructions of the European Council (Resolution 1218/92), delivered just as the single market was formally supposed to become reality on January 1, 1993. The reason for having such a review is due to the singular importance, partly historic and institutional, partly economic and social, of the SMP to the whole process of European integration.

1.1.1. The historic importance of creating a single European market and progress up to the start of the SMP

Creating a unified European market has been a fundamental objective of the Community since its very beginning in the 1950s. In Article 7A, the Treaty of Rome itself envisages the abolition of all internal obstacles to the free movement of people, goods, services and capital (the so-called four freedoms). By the end of the 1960s, much had already been achieved — tariffs and quotas on intra-EU trade had been abolished, a common external tariff on imports from third countries introduced and (in 1969) a programme introduced to remove intra-EU technical barriers.

Nonetheless, despite these advances, capital flows, intra-EU trade in both goods and services, and the free movement of persons around the Community for work or leisure purposes continued to be stifled by numerous non-tariff barriers (NTBs) into the 1970s and 1980s. These NTBs could, broadly speaking, be divided into three: firstly, physical barriers, in particualr customs controls, which were used to enforce national norms on cross-border trade and resulted in significant delays (in the early 1980s, a goods-laden lorry travelling 1 200 kms within a Member State entirely lawfully could complete the journey in 36 hours, but if it had to cross just two frontiers, the time needed rose to 58 hours!); secondly, technical barriers (different standards prevailed in different Member States for similar products and Member States pursued deliberately discriminatory 'buy domestic' public procurement policies without regard for the economic consequences) and fiscal barriers (widely divergent VAT rates in neighbouring Member States fuelled market fragmentation as Member States acted to prevent arbitrage in order to preserve tax revenues). The effect of these was to shelter European industries from the full force of international competition, compromising efficiency, the optimal use of resources, and sensitivity to market signals.

This, combined with the recessions that followed the oil price shocks in 1973 and 1978, and persistently high rates of unemployment and inflation made Member States turn inward during the 1970s, preferring to focus on domestic problems rather than further trade liberalization. Thus continuing market fragmentation partially explains the Community's persistently poor performance into the first half of the 1980s. However, periods of economic weakness and high unemployment are never good times to advocate trade liberalization.

Nevertheless, the Community's lack of international competitiveness became more and more apparent and a growing source of concern in the first half of the 1980s. In the light of increasingly globalized markets and competition, plus faster technological developments and diffusion, trade integration began to be viewed as essential for the Community's future economic prosperity and potential to create jobs. There was a general recognition that unfettered, open markets work best, or at least better than markets that are even partially closed off from each other. Discussion within the Community on this issue culminated in the 1985 White Paper on completing the internal market, which identified the myriad of non-tariff barriers preventing intra-EU trade and provided a strategy for their removal aiming at the complete integration of the European economy by end-1992. The Single European Act of 1986 provided the political and legislative instruments that facilitated the integration process as well as complementary action in other policy domains such as R&D policy.

1.1.2. The economic importance of the SMP

Successful completion of the single market has very important economic implications for the Community. It should improve the competitiveness of the EU economy in world markets, increase employment, raise living standards and accelerate the rate at which those living standards grow around the Community thereafter. These potential economic consequences of the SMP were analysed in the Cecchini study (published in 1988), which identified the channels through which such consequences would arise, and estimated their magnitudes. Four principal channels were held to hold the key to any potential economic gains:

(i) significantly lower costs thanks to better exploitation of various kinds of economies of scale at both the production unit level and the enterprise level;

(ii) improved enterprise efficiency, together with rationalized industrial structure and price-setting that better reflected actual production costs, thanks to the pressure of increased competition following the decline of barriers;

(iii) industrial readjustments around the Community to reflect better Member States' comparative advantages;

(iv) a stream of innovations, new processes and new products due to the competitive pressures stimulated by the single market.

The overall conclusion was that the benefits of completing the Community market flowing from these four channels could be quite substantial. Furthermore, resources would be liberated for alternative productive uses, and the long-run sustainable level of EU-wide consumption and investment raised to higher levels.

The single market and its macroeconomic environment

From the above, it should be clear that the SMP was really a microeconomic supply-side initiative. However, the Cecchini study showed that the undoubted benefits of the SMP could be lesser or greater depending upon the macroeconomic environment in which it was introduced. Two simulations were carried out, representing two different macroeconomic policy regimes inside the Community. One simulation considered the impact of a passive macroeconomic policy. The second considered a more active, expansionary macroeconomic policy. The positive impact of the SMP was expected to be significantly greater in the second case. However, in reality, economic events (e.g., German unification) forced an EU-wide macroeconomic policy environment during implementation of the SMP more like that envisaged in the first simulation. Clearly, this may have restrained the potential positive effects of the SMP.

1.2. The definition of the SMP

1.2.1. The 1985 White Paper on completing the internal market

Strictly speaking, the SMP is based on the hard core of legislative proposals set down in the 1985 White Paper on completing the internal market and the legislative measures actually implemented in the period 1988-93 as a direct result of the White Paper. A major legislative undertaking, the White Paper aimed to eliminate non-tariff barriers — particularly technical, administrative, and fiscal barriers — to trade, investment and the freedom of individual movement inside the Community. In the White Paper, the Commission proposed 282 specific measures to remove non-tariff barriers. Table 1 below details the particular targets of the White Paper measures according to the broad classification described in the previous section — physical barriers, technical barriers and fiscal barriers. Note that subsequent experience and the changing circumstances under which the single market has developed have necessitated some revisions of the White Paper measures (though not their broad categorization) and as a result only 275 are now in force.

Table 1

Non-tariff barriers identified in the White Paper on the completion of the single market

Physical barriers
Veterinary controls
Plant health controls
Controls on individuals
Specific controls (fuel tanks, waste)
Technical barriers
Special arrangements (arms, cultural works)
New approach (standards)
Motor vehicles
Tractors and agricultural machinery
Foodstuffs
Pharmaceuticals
Chemical products
Construction and construction items
Technical harmonization (other items)
Banks
Insurance
Transactions in securities
New technologies and services
Transport
Company law
Intellectual and industrial property
Company taxation
Public procurement
Free movement of persons
Tax barriers
VAT
Excise duties

Source: European Commission.

1.2.2. Beyond the White Paper — complementary policies

However, in assessing the impact of the SMP, it is justifiable to use a definition which is wider than the White Paper measures alone because they were not, first of all, comprehensive. A number of sectors characterized by NTBs were not covered by the White Paper (notably energy), yet are now also becoming the target of NTB removal and so can legitimately be considered *de facto* as part of the SMP. Indeed, in many sectors new deregulatory initiatives have been promoted after the White Paper and can be viewed as part of the process of creating a single market.

Furthermore, given the opportunities provided by the SMP for the exploitation of economies of scale and the rationalization of production across Europe, there is a risk that competition could suffer in certain sectors as monopoly or oligopoly structures

develop. European competition authorities must be vigilant to such dangers, and should monitor any industrial concentrations and also have powers to act in case such concentrations appear likely to be excessive. In the process of completion of the SM, competition policy has been particularly strengthened in the domain of merger concentration, with the adoption of the merger regulation in 1989. Any analysis of the SMP should therefore take into account the role of competition policy, its evolution in the recent period, and its effects in the marketplace.

Another Community initiative which complements and affects implementation of the SMP is regional policy. Use of the structural funds is justified explicitly by the need to ensure that the SMP does not adversely affect regional convergence. The transfers involved are significant enough to have potentially important macroeconomic effects. They are also designed to influence the location of productive activity around the Community which clearly relates to the expected SMP-spurred reallocation of production in order to capture potential scale economies. Clearly then, regional policy is a flanking measure for the SMP and therefore it should be taken into consideration in any assessment of the SMP impact.

Subsequent chapters of this edition of *European Economy* will indeed use a definition of the SMP that goes further and wider than the list of White Paper measures alone to include complementary Community policies with the same fundamental aim of achieving the 'four freedoms'.

1.3. The scope of the single market programme

Given knock-on effects, the creation of a single market is bound to affect virtually all parts of the European economy. This is all the more true when the definition of the single market is enlarged to include competition policy and regional policy. However, sticking to the narrower White Paper definition of the SMP as being just about non-tariff barrier removal, work done by Buigues et al. (1990) ascertained that 40 out of the 120 manufacturing sectors categorized at the NACE 3-digit level of disaggregation were likely to be especially affected because intra-EU trade in those sectors was particularly handicapped by non-tariff barriers. At that time, these 40 sectors represented somewhere around 12 to 18% of Community GDP (about 40 to 60% of Member States' value added in manufacturing).

The SMP was also expected to have an impact on market services inside the Community. In common with the situation in other parts of the world, these had long been sheltered from competition as high levels of regulation suppressed service mobility across markets and service firms within markets, more in some Member States than others. Although from its very beginning, the Community had made decent progress in establishing rights for service firms to establish around the Community, advances in liberalizing services trade made no real progress before the mid-1980s. Even the SMP measures to liberalize trade in services can only be regarded as 'the beginning of the last step to freedom' (European Commission (1993)), whereas the SMP can be viewed as the final step needed to create the completely free movement of goods within the Community. Of the 282 White Paper measures, only about 50 concerned services — especially financial services, transportation, telecommunications and professional services. Nevertheless, in combination with technological progress and globalization (discussed further in Chapter 2), the SMP could still lead to significant restructuring and growth of market services around the Community. Given the importance of market services to the Community economy — in 1990, they accounted for 48.2% of GDP and 42% of employment, whilst manufacturing accounted for 30% of GDP — the cumulative effect of such restructuring and growth could be very significant indeed (for an assessment of the impact on services, see section 1.6. below).

1.4. The legislative effectiveness of the single market programme

Although the single market programme has proved to be globally effective, there are areas where more work is still necessary. Nevertheless, overall it is effective enough to be having an impact on markets inside the Community. By comparison with the situation in 1985, much has already been achieved. It is like a rocket not yet in orbit, but well above the launch pad. The evidence for this comes from three sources, all of which give the same overall message:

(a) the current state of completion of SMP legislation;

(b) economic analysis;

(c) survey results.

The current state of SMP legislation is presented in this section. The evidence from economic analysis forms the backbone of this edition of *European Economy*. The survey evidence is used throughout this edition to supplement the economic evidence.

1.4.1. The current state of transposition of single market legislation

The first essential step in creating a single European market is to make sure that Member States actually introduce single market measures into their domestic legislation. Although transposition of single market measures is still improving, inadequate transposition still emerges as a major concern in some sectors and areas. Focusing on implementation of the body of White Paper measures (even if the SMP is in this

edition generally considered to be more than just the sum of those measures, the White Paper measures remain the heart of the SMP), it is clear that the task is nearing completion. At the Community-level, by mid-September 1996, the Council had adopted 259 single market proposals from the Commission, leaving just 12 outstanding — four concerning company law, another two company taxation. The rest cover VAT, intellectual property, the free movement of persons, foodstuffs, veterinary controls and phytosanitary controls.

The 259 adopted proposals have in turn meant that by mid-September 1996, 275 measures had entered into force,[1] with 219 (translating into 1 378 Directives) requiring national implementation laws.[2] On average, Member States had transposed 92.9% of those 219 into their domestic legal systems. By contrast, to highlight progress made, at the end of 1992 Member States had on average transposed about 75%. On the other hand, to give an idea of the work that is still necessary, only 55.6% of the 219 measures needing national implementation have actually been transposed by all 15 Member States (see Table 2). Clearly, such a shortcoming diminishes the benefits of the single market. It is easy, however, to exaggerate the problem because 14 out of 15 Member States have transposed almost 82% of the 219 measures.

As we can see from Table 3, the leading Member States in terms of SMP measures actually put into domestic legislation are the Netherlands and Denmark, with over 99% transposed. Next is the UK with almost 96% and then Sweden with 95.5%. The other two new Member States, Austria (83%) and Finland (87.7%) still have progress to make. Similarly, Italy, Germany and Belgium have each put just over 90% into domestic law.

[1] For legal reasons, some proposals have had to be translated into several measures in order to achieve the aim of the proposal; hence, the number of proposals is unequal to the number of consequent measures to be taken.

[2] Unless a Member State's domestic legislation already provides the necessary legal support, in which case some Directives may not be applicable.

Table 2

Classification of White Paper measures by number of Member States having transposed them correctly — 16 September 1996

No of Member States having transposed	Total number of measures = 219	Percentage
15/15	121	55.6%
14/15	179	81.7%
13/15	190	86.8%
12/15	197	90.0%
11/15	205	93.6%
10/15	208	95.0%

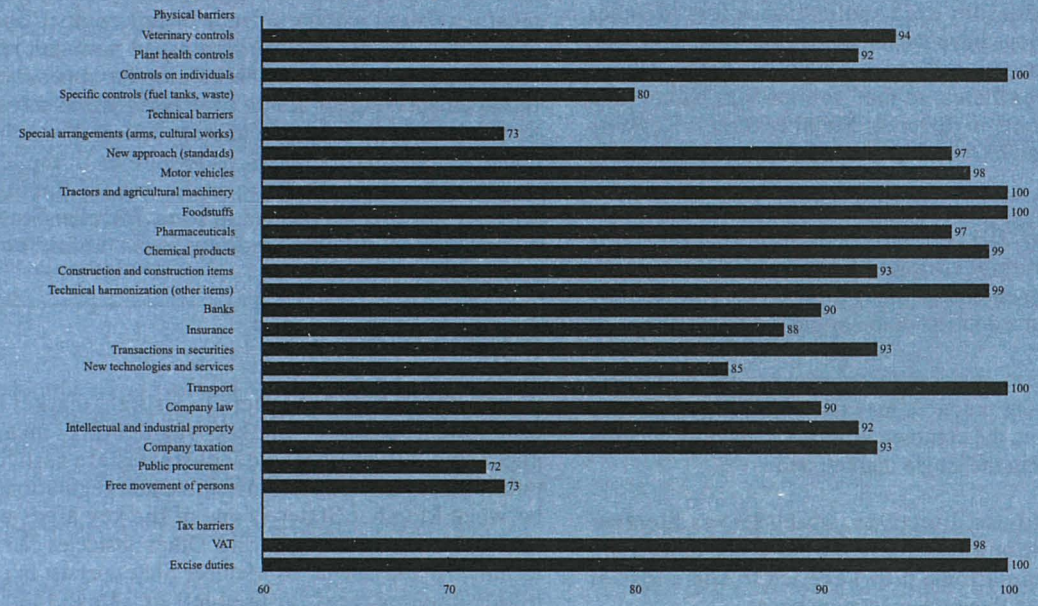
Table 3

State of implementation of White Paper measures by Member State — 16 September 1996
275 provisions in force / 219 requiring national implementing measures

	Transposed measures	Not applicable	Derogations	Measures not yet transposed	Partially transposed	Infringement proceedings for non-conformity
A	181	1	0	31	6	0
B	198	0	0	10	2	3
DK	215	2	0	0	0	2
D	196	2	0	14	2	5
EL	194	3	3	16	1	2
E	204	0	0	5	5	5
F	202	0	0	8	4	5
FIN	191	1	0	21	6	0
IRL	204	2	0	6	2	5
I	196	2	0	14	0	7
L	207	4	0	5	0	3
NL	217	0	0	0	1	1
P	200	3	3	6	0	7
S	208	2	0	8	1	0
UK	210	0	0	3	2	4

Source: European Commission.

GRAPH 1: **State of implementation of the White Paper measures**
Situation by sector (in %), 16 September 1996



Source: European Commission.

The chief areas for Member States where work still remains, as Graph 1 shows, whether in terms of transposing or implementing Community legislation, concern for example public procurement, intellectual property and insurance. These areas, together with the areas covered by proposals still awaiting Council agreement, are those where the single market has had the smallest economic impact.

1.4.2. Problems with the operation of the single market

The fact that SMP legislation has to a great extent been transposed into Member States' domestic legislation is not in itself a sufficient condition for the single market to actually work. Now that the legislative framework is nearing completion, new problems are becoming clearer. These problems can broadly be divided into four:

1. non-adoption of single market measures;
2. legislative inadequacies;
3. ineffective enforcement of the legislation;
4. the emergence of new obstacles.

Non-adoption of single market measures

Eleven years after the launch of the White Paper programme, a 'hard core' of proposals from the 1985 White Paper still remains to be adopted (as noted above), and some sectors remain to be liberalized. The main stumbling blocks are in key areas affecting business management, such as company law and corporate taxation, the free movement of people, cross-border payments and full liberalization of the transport and energy markets.

Inadequacies of single market legislation

Even when SMP measures have been adopted and transposed into domestic law, obstacles to free movement remain and in some cases the needs of economic operators wanting to engage in cross-border transactions are not well accommodated. Such problems have occurred for different reasons:

- sometimes the legislation is unclear;
- sometimes its scope is too limited;
- sometimes legislation entails over-complicated procedures, leading to excessive compliance costs.

Unclear legislation

Although the SMP aimed to create a level playing field by providing a set of rules for even application across Member States, some provisions have lacked clarity and precision. The result is divergent, occasionally even conflicting interpretations by different Member States, so that business has had to face different requirements in different Member States. Reasons behind this defect can be found in one or more of the following factors:

- complexity of EU decision-making processes (for example, unanimity voting in Council, and last-minute compromise amendments made to reach consensus) may have resulted in a dilution of the original proposal;
- Member States' insistence on preserving particular national rules and practices may have forced them to seek derogations from the common provisions, thereby creating distortions within the single market; and
- the decision to use directives, which leaves Member States to decide how to achieve the enshrined objectives, rather than regulations, may have led to some loss of harmonization in the implementation phase.

Limited scope

In a few cases, single market legislation has not adequately encompassed new market and product developments or the emergence of newly identified needs or barriers, and has therefore failed to meet current business requirements. An example of this can be found in the field of industrial products, where some technical regulations still do not cover installation rules (e.g., gas appliances, electro-medical equipment and telecommunications equipment). This can allow discriminatory national technical specifications to be maintained.

Over-complicated procedures and high compliance costs

Companies sometimes complain about two different types of costs associated with implementation of the SMP:

- the first is the short-term, transitional costs of change to harmonized systems and conformity with new technical requirements; these are inherent to any changeover and are offset by additional gains from improved market access and export opportunities, although for firms operating on local markets (particularly SMEs), compliance with new technical standards may be disproportionately costly;
- the second is excessively complex and detailed regulation, which forces companies to invest substantially in order to comply; some of these difficulties may arise from the transposition of EU legislation into national law.

Ineffective enforcement and implementation

Uneven enforcement of EU legislation is often regarded as the most persistent barrier to trade or fair competition because overcoming it entails close scrutiny of national, regional, or even local practices which cannot be supervised easily. Enforcement methods are far from harmonized across Member States, leading to two contradictory concerns: (a) the possible abuse of safeguard clauses or loopholes in the legislation, resulting in new barriers to trade; and (b) doubts as to the adequacy of market control in some Member States, giving manufacturers in these countries an unfair competitive advantage.

Regulatory barriers

As the most obvious barriers to a single market have been eliminated, so new market-fragmenting measures are appearing. Often, these new obstacles are associated with public policy objectives. Environmental regulations differing between Member States is one of the key areas where new obstacles to trade are appearing. Other obstacles can arise from technical requirements, as Member States persist in prescribing highly detailed rules for products on sale in their domestic markets. On average, more than 300 new national technical requirements for products are notified to the Commission each year.

1.5. The effectiveness of single market legislation in overcoming the most important non-tariff barriers

In this section, attention turns specifically to the evolution since 1985 of the most important barriers, in terms of the wide scope and significance of their economic impact, which have segmented the European market: customs and fiscal barriers, technical barriers, 'buy domestic' public procurement policies, and restrictions on capital markets. The evidence presented is a mixture of economic analysis from studies on the SMP impact carried out by independent consultants for the Commission and survey results (see Box 1 for details on the surveys).

1.5.1. Customs and fiscal barriers

Physical frontier checks have been eliminated by the SMP, a measure which seems to have been the most appreciated of all from the point of view of manufacturing industries according to the Eurostat business survey (see Graph 2). This is very understandable as complying with customs formalities at internal Community frontiers implied considerable cost to traders. The implementation and success of this SMP measure was made possible by:

Box 1: Surveys of the SMP

As part of the process of reviewing the effectiveness and impact of the SMP, Eurostat (the Statistical Office of the European Communities) was charged with carrying out a survey of awareness, attitudes and reactions to the SMP at the company level. The survey covered approximately 20 000 manufacturing and service enterprises of all sizes in the 12 Member States that composed the Community up to 1993. All service firms with more than five employees and manufacturing firms with over 20 employees were asked to rate the success of the SMP, and its impact on their strategies and operations. More than 13 000 replies were received (i.e., a 65% response rate).

A separate survey of 200 European trade associations' (responsible for individual industrial sectors or subsectors accounting for 78% of the value of total production in the 80 largest EU industrial sectors, and 80% of employment) perceptions of the effects of the SMP was coordinated by the consultancy DRI in the context of the Commission's 1995/96 Panorama of European industry. This used 'face to face' interviews to seek views on the relevance of the SMP's legislative measures, the impact on industry, and a global assessment of the overall operation of the single market so far.

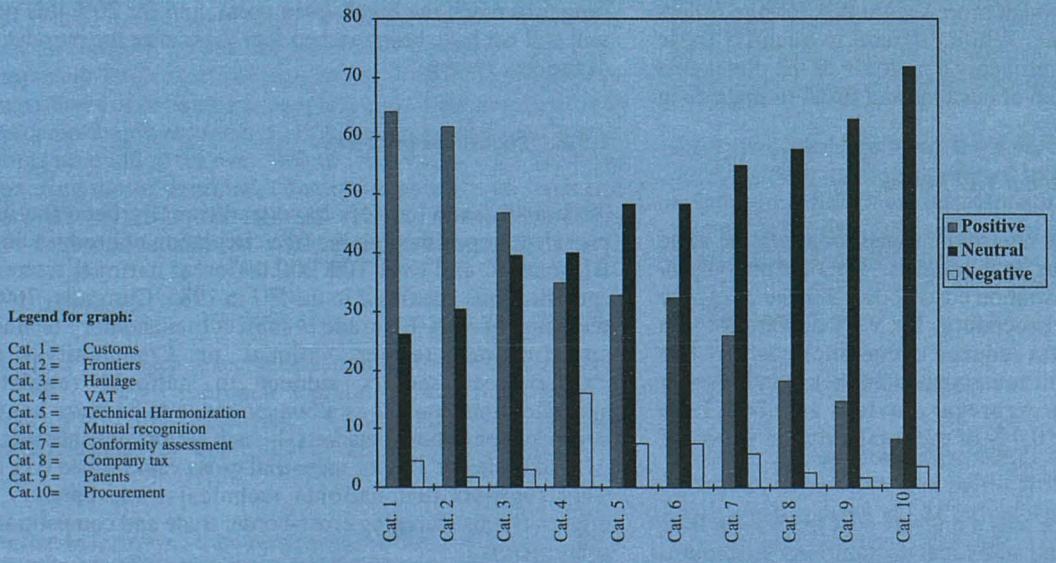
Meanwhile, many of the independent consultants carrying out studies to analyse particular SMP effects (whether on particular sectors or horizontally) also conducted their own surveys and used the results to inform their study conclusions.

- the adoption of transitional VAT legislation for intra-EU trade which retains the principle of taxing transactions at the point of origin whilst allowing VAT to continue to be levied in the Member State of destination;
- changes in statistical reporting proceedures (Intrastat);
- the abolition of customs clearance procedures on intra-Community transactions thanks to which 60 million customs forms have been removed;
- the reorganization of controls on veterinary and phytosanitary products and certain other sensitive products.

The impact of abolishing frontier controls

Thanks to the removal of border controls, moving products across borders is no longer subject to delays and uncertainties. The effect on hauliers of eliminating delays at frontiers has

GRAPH 2: **Manufacturing enterprises' responses to Eurostat about the impact of the SMP on various obstacles to the free circulation of goods (% of respondents)**



Legend for graph:

Cat. 1 = Customs
Cat. 2 = Frontiers
Cat. 3 = Haulage
Cat. 4 = VAT
Cat. 5 = Technical Harmonization
Cat. 6 = Mutual recognition
Cat. 7 = Conformity assessment
Cat. 8 = Company tax
Cat. 9 = Patents
Cat.10= Procurement

Source: Eurostat business survey, 1996.

Box 2: Impact of customs abolition for the textiles and clothing sector

Prior to the single market, customs checks on textiles and clothing shipments were more pronounced than for other sectors as frontier controls were employed to administer national quotas on third country imports, quotas which had persisted despite the establishment of the common commercial policy. To prevent national restrictions on specific products from certain sources being bypassed by indirect imports through Member States applying zero or limited restrictions to imports of the same product, special controls were enforced at intra-Community crossing points (on the basis of Article 115 of the Treaty). One half of all Article 115 authorized restrictions on cross-border shipments in the period 1984-92 related to textiles and clothing. In other words, cross-border shipments of textiles and clothing products were particularly hard-hit by customs formalities and requirements in the pre-SMP period. (IDS, 1996)

It is therefore unsurprising that operators in this sector have perceived particularly large benefits as a result of the abolition of frontier formalities. Producers and distributors report reduced delivery times of 15-20% on average, with some citing reductions of two to four weeks in the time taken from receipt of order to delivery. When coupled with the reduction in the cost of road haulage services (ascribed in part to SMP-induced competition in this sector), the SMP is considered to have made possible much more rapid cross-border delivery. As a result, textile and clothing manufacturers are estimated to have enjoyed a reduction in production costs of 0.2-0.5% of turnover. (CEGOS, 1996)

Furthermore, it has become economical to ship small deliveries across frontiers, thereby expanding the range of clients and allowing overnight demands to be met. This is seen as increasingly important given the growing demands placed on producers by organized distributors who are keen to source products from around the Community, but require prompt deliveries and rapid turnover of product ranges. CEGOS estimate that whereas previously products could only afford to exceed the price of third country imports by 15% (primarily as a result of tariff protection), it is now felt that this wedge has increased to 20% thanks to the enhanced service quality and rapid delivery times associated with SMP completion.

been savings of about ECU 400 million.[1] This translates into savings of around 2% of total costs for a haulier making a typical 1 000 km road journey. However, a further effect has been to make intra-EU shipments no more complicated to carry out than domestic shipments, encouraging the overhaul of distribution and logistics networks around the Community; in particular, there has been a marked development of pan-European logistics services as well as implementation of 'just-in-time' and quick replenishment strategies (notably in the textiles and clothing sector, see Box 2). For fast moving consumer goods in general, commercial horizons have widened as purchasers now feel much more secure that foreign orders can be delivered on time. While difficult to quantify these improvements, they are probably a multiple of the direct cost benefits from the abolition of customs and fiscal formalities in the sectors concerned.

Switchover to the transitional VAT system

A majority of firms now regard the transitional regime as an improvement on previous arrangements.[2] Detailed analysis of traders' in-house administration costs shows that the change to the current transitional procedures for VAT declarations on intra-EU transactions has reduced compliance costs by two thirds (although they still remain much higher than those for domestic transactions). Aggregate savings are about ECU 5 billion per annum, or 0.7% of the total value of intra-EU trade.

On the other hand, there was a one-off cost from switching over to the new fiscal and statistical declarations procedures significant enough to trigger much protest in the months following introduction of the system. According to a sample group of 230 companies, these costs amounted to less than ECU 15 000 for half of the sample and less than 25 000 for 70%. Although not negligible, they have nevertheless been quickly amortized by companies regularly engaged in cross-border transactions — companies accounting for one third of total consignments should have repaid their set-up costs within the first three months, and those responsible for 50% would have recovered them within one year. Only companies which undertake relatively few cross-border shipments have taken longer to reach the break-even point, and for 20% this point will still not have been reached four years after the introduction of the new system.

1.5.2. Technical barriers

Technical trade barriers have traditionally been the most prevalent impediment to the free circulation of products in the EU market, and over 100 000 different national technical specifications coexisted in the EU in 1985. Currently, 76% of the value of intra-EU trade is subject to mandatory technical specifications (either national or Community-wide). Furthermore, sectors subject to national regulatory specifications appear as a consequence to be more heavily dependent on national markets — such sectors only account for 21% of trade but 29% of industrial gross value added (GVA).[3] This suggests that national technical trade barriers are effectively discouraging cross-border trade and competition in some sectors.

[1] *Source:* Price Waterhouse study.
[2] *Source:* SITPRO, UK 95 and Price Waterhouse 1996.
[3] W. S. Atkins 'Technical barriers to trade' study.

A central tenet of the SMP in this domain has been the need for greater coordination and collaboration at the Community-level to eliminate unnecessary costs. A number of approaches are used to achieve these ends.

Mutual recognition

The Commission has pressed for the widest possible application of the so-called 'principle of mutual recognition' i.e., that Member States must allow market access to products manufactured in a partner Member State if those products conform to the partner's specifications, and those specifications embody 'equivalent' levels of protection for prescribed objectives.[1] Full use of the 'mutual recognition' principle is relied upon to overcome technical trade barriers affecting 25% of intra-EU trade (or more if 'mutual recognition' comes to play an increasing role in ensuring the free circulation of newly emerging products).

Technical harmonization

Where 'equivalence' between levels of regulatory protection embodied in national regulations cannot be assumed, however, the only viable way to remove the technical barrier in question is for Member States to reach qualified majority agreement on a common set of legally binding requirements. EU legislation harmonizing technical specifications has involved two distinct approaches, the 'old approach' (detailed harmonization) and the 'new approach'.

'Old' approach

This is used for certain products where the nature of the risk is held to require extensive product-by-product or even component-by-component legislation. So far, the adoption of programmes of detailed harmonizing legislation seems to have overcome deeply entrenched technical trade barriers affecting sectors accounting for over 30% of the value of intra-EU trade (covering motor vehicles, chemicals, pharmaceuticals and foodstuffs sectors). Although only recently entered into force, there is general satisfaction with their operation.

'New' approach

The 'new' approach to technical harmonization was introduced in 1985. 'New' approach legislation confines itself to prescription of 'essential' requirements — detailed specifications for compliance are not prescribed. Such legislation has been applied in a wide range of sectors, including both consumer products (e.g. toys) and equipment goods (e.g. machines), covering products which account for 17% of the value of intra-Community trade in manufactured products. The limited experience so far suggests that this approach is effective and that the task of preparing European standards to ensure the effective functioning of the single market is well in hand. Products governed by this legislation can be marketed anywhere in the EU and circulate freely without further checks, or adaptation.

Conclusions

Despite the fact that Community legislation to eliminate technical barriers is only now coming into force, it is generally seen as effective. Surveys of business operators and their representative bodies reveal a strong vote of confidence in efforts to eliminate technical trade barriers. In many product sectors (chemicals, mechanical engineering, office equipment, foodstuffs, motor vehicles), between 35-50% of respondents regard EU efforts as having generated benefits, as opposed to less than 10% who experienced negative consequences (probably due to transitional costs). The proportion of large firms having a positive opinion consistently exceeds 50%, but smaller companies (<50 employees) are not as positive (30% positive and 15% negative). The higher proportion of smaller companies experiencing adverse consequences is probably due to the costs of switching over to new compliance procedures and/or specifications, but also increased competition from companies established in other Member States.

On the other hand, 'mutual recognition' is still proving difficult to enforce in a way which guarantees unimpeded access to all Member State markets, particularly for products where the underlying risk to the consumer or user is potentially high.

Recent accomplishments have defined ground rules for the definition and implementation of technical specifications, and created an institutional infrastructure capable of delivering a technical barrier-free single market. Surveys of industry federations consistently find that the SMP is held to be a crucial safeguard against the technical refragmentation of the single market.

1.5.3. Public procurement

Protecting large areas of economic activity from competition involves large costs, and public procurement practices have traditionally been all about protection — discriminatory procurement practices, deliberately restricted access to markets supplying the public sector or utilities to a limited number of national suppliers. As a result, in 1987, less than 2% of public purchasing was awarded to non-national suppliers, compared to levels of between 25 and 45% for private sector purchasing.

[1] According to Article 36, these are public morality, public policy, public security, protection of health and life of humans, animals and plants, protection of national treasures, protection of industrial or commercial property. Account must also be taken of other 'mandatory requirements' which justify derogations for Article 30 (protection of the environment, working environment).

Single market public procurement legislation aims to break such discrimination down by improving the transparency and objectivity of public procurement contract awards. Success could lead to potentially huge benefits. Public procurement of works, supplies and services accounted for 11.5% of EU 15 GDP in 1994 or ECU 721 billion (i.e. the combined size of the Belgian, Danish and Spanish economies or ECU 2 000 per EU citizen).

Unfortunately, any judgment regarding the effectiveness of Community procurement legislation is constrained by the short time since much of the legislation came into force and their slow pace of transposition into national law.[1] Still, there are signs that the legislation is starting to bite. Substantial increases in the level of publication of Official Journal tender notices have been recorded, from 12 000 in 1987 to 90 000 in 1995, whilst a wide-ranging survey of suppliers reveals that a significant number have benefited from the new mechanisms to identify new opportunities in both partner country and domestic procurement markets. Those companies actually identifying new opportunities also display high levels of responsiveness (90% rate of response to domestic and 70% to cross-border opportunities). Of companies submitting tenders in response to newly identified cross-border opportunities, 44% reported that they had won new business. Looking at the situation from the other side of the coin, 36% of respondents also reported increased competition on their domestic markets.

In other words, EU legislation on public procurement liberalization is already acting as an effective catalyst for increased competition in public procurement markets. The impact on cross-border competition has been small, but non-negligible — the proportion of procurement purchases sourced directly from partner country markets has doubled from 1.4 to 3% between 1987 and 1994, whilst procurement purchasing indirectly sourced from partner countries via intermediary sales offices or subsidiaries, has expanded from 4 to 7% in the same period. Relatively high levels of import penetration are now recorded in some product markets typified by high levels of public procurement.

On the other hand, despite these positive developments, there is as yet little evidence of substantial savings to public purchasing authorities. Still, contracting entities and suppliers are only just beginning to probe the new SMP opportunities. Only 15% of purchasing entities thought to be subject to the legislation are estimated to have actually published tenders, suggesting that entities have yet to come to grips with the new disciplines.

[1] The Codified Excluded Sectors Directive entered into force on 1 July 1994. Its entry into force is postponed for Spain until 1 January 1997, and for Greece and Portugal until 1 January 1998.

1.5.4. Capital market liberalization

The free movement of capital is one of the SMP's 'four freedoms', now written into the Treaty of Rome and one of the cornerstones of the single market as well as a building block for EMU. It is also an essential condition for a single market in financial services. Due to the single market, all capital controls have now been removed and all forms of capital movement between Community residents completely liberalized.

To study the impact of this and capture the degree of capital market liberalization in the EU, a study by the NIESR approached the problem from different angles: three hypotheses on the macroeconomic effects of capital mobility were empirically tested and a survey of EU financial institutes on remaining barriers to the free movement of capital carried out. Information on the latter was also obtained from the OECD codes of liberalization.

The NIESR conclude that capital mobility certainly has increased since the late 1980s (although the empirical tests of the macroeconomic effects have to be interpreted cautiously because of the underlying assumptions and potential theoretical problems of the methods used). There really do now appear to be few barriers to capital mobility between Member States. Moreover, the increase in intra-EU capital mobility has been larger than *vis-à-vis* non-EU countries. However, the removal of barriers to capital mobility has proceeded at a slow and variable pace throughout Europe. Progress has been more pronounced in Member States with more initial restrictions.

The study looks at onshore and offshore rates on equivalent financial instruments in the same currency. When countries limit the inflow or outflow of capital then the rates of return on the two markets will differ as international arbitrage cannot take place to equalize rates. The onshore-offshore differential gauges both ongoing transaction costs and the effects of barriers to mobility. If there are no such barriers, the differential should be small. It is found that this is actually the case. Onshore and offshore rates are now similar for most Member States of the Union.

The result of the NIESR's survey also suggest that a considerable degree of capital market liberalization has already been achieved. Respondents judged the freedom of capital movement in the EU as a whole to score now almost 8.5 out of 10, compared with less than 6.5 in 1990. Indeed, it appears that domestic requirements encourage residents to buy, sell and hold equities abroad rather than at home, while, to a lesser extent, placing non-residents at an advantage over residents with respect to similar transactions on the home market. There may thus be an artificial stimulus to capital movement in both directions which distorts the efficient allocation of capital. This possibly counter-intuitive finding may derive from the interaction between relative freedom from domestic restrictions

of foreign activities by residents and the incidence of domestic taxation. In general, non-residents encounter least constraint in their transactions on bond and money markets, while they are least free in respect of collective investment securities and in the field of investment services, especially management of privatization issues, lead management of bond issues, market making and access to payment systems.

Of the various kind of factors which were still seen as inhibiting or distorting capital movements by the survey respondents, the most frequently cited could be broadly categorized as insufficient liquidity in local markets, national differences in market structures, company law and accounting frameworks, non-residents' tax treatment and exchange rate risk.

NIESR obtained similar results from analysing the OECD's codes of liberalization. All OECD Member States subscribe to codes of capital market liberalization thereby undertaking to remove restrictions on specified lists of cross-border capital transactions. However, countries may lodge reservations against specific items on those lists which they are unable to liberalize. It appears that EU Member States generally have only very few, mostly quite specific, reservations registered under the codes. An average of 3.5 reservations per Member State suggests that the EU allows greater overall freedom of capital movement than the US or Japan, which both entered 4.5 reservations. Moreover, the activities of EU residents are explicitly exempted from a number of the reservations entered by EU Member States. This provides some indication that liberalization within the EU has in part been motivated by the SMP. However, the situation is not completely even across the Union: two Member States have no reservations, while seven Member States account for more than 80% of the EU total. There are also pronounced differences between different categories of market activities, operations in collective investment securities and money-market securities being relatively free of reservations, while operations in securities on capital markets and the provision of banking and investment services together account for over half the total number of reservations entered. In addition, 10 Member States have entered reservations against the freedom of establishment and operation of branches of foreign insurers, banks and other financial institutions which qualify their freedom to conduct capital market or money-market operations.[1]

More evidence that there has been a substantial increase in the freedom of capital movement throughout the EU since 1990, with most change having been achieved in the most restricted markets, is found in the Eurostat business survey (see Box 1 for more details). Significant minorities of businesses attributed increased freedom to move capital to the SMP (some 23% of firms in manufacturing and 25% of firms in the financial intermediation business). However, the share of those perceiving no change at all remained relatively high, at 61 and 72% respectively.

Freedom of capital movements is judged to be 85% achieved by respondents[2] to a further survey, compared with only 65% in 1990. The importance of barriers to capital requirements, in terms of the restrictions they place on enterprises' ability to operate in other EU countries, was seen only of low to medium importance by respondents around the EU. However, the elimination of exchange rate uncertainty would result in greater borrowing and investment and inward and outward capital flows between the Member States. On the other hand, the effectiveness of the single market is constrained by the 'sluggishness' of banks and credit institutions themselves in responding to the SMP.

1.5.5. Concluding remarks

Overall, a mixed picture emerges concerning the effectiveness of abolishing NTBs inside the single market. Clearly, the elimination of customs frontiers and of restrictions to capital flows has been achieved and felt in the market, but in other areas the situation seems to have changed only partially since the adoption of SMP legislation (i.e. fiscal and technical barriers, public procurement). This may be due to the non-implementation of part of the legislation or the fact that types of barriers other than those targeted continue to exist. These include differences in national legislation, be it on taxes, prudential requirements, company law and other regulations. However, psychological barriers, such as preferences for national products, lack of information, cultural or language barriers, habits and traditions may also limit some cross-border movements of goods and services, but such barriers need not be changed by the SMP. On the other hand, however, the reaction chain — from legislative changes at the EU level, to national adoption of appropriate legislation, to the behaviour of consumers and firms — has not always been achieved. In some cases, firms and consumers simply appear not to be aware of or interested in the new freedoms offered by SMP legislation.

1.6. The impact of the single market programme on market services

As is discussed in section 1.3. above, prior to the single market, market services inside the Community were subject to numerous regulatory barriers to trade. Although the initial

[1] Out of those, about one third only applies to third countries but not EU members. The rest apply to both groups.

[2] *Source:* Credit institutions and banking study survey.

scope of the SMP in the field of services was rather moderate and its details missing, nevertheless it had a clear orientation and a fixed timetable. By 1993/94, most White Paper measures aimed at opening up the services sector were transposed. More importantly, the original set of objectives in the services sector has been significantly enlarged in subsequent years. Given the importance of market services to the EU economy, it is interesting to see what impacts these liberalization measures have had.

1.6.1. Some evidence on progress so far

Capacity restrictions in both road freight and air transport have been removed, allowing transport companies to extend their networks and improve the use of their assets. In road freight transport, the resulting savings for a typical 1 000 km journey from the abolition of quotas and gradual introduction of cabotage are between 3-4% of total costs.[1] In air passenger transport, this has resulted in increased flexibility for airlines to adjust capacity (number of seats and frequencies) to meet passengers' demand and offer discounts to customers to improve traffic revenue.[2]

Although the effectiveness of new rules on freedom of establishment is difficult to measure, nevertheless the new system seems to work well. Thus, in air transport, new companies have entered the market on both intra-Community and domestic routes, a prospect unimaginable some years ago. Incumbent airlines too, such as British Airways, Lufthansa, Swissair and KLM, have taken advantage of the right to establish an airline based in another country and expanded their networks in other EU countries. In banking, cross-border branching by credit institutions has steadily increased over the last three years, albeit from a very low base, increasing by 58% the number of cross-border branches operating in the single market between 1993 and 1995.[3]

1.6.2. Business perceptions

Of all the SMP measures aiming to deregulate market services inside the EU, liberalization of cross-border operations and capital movements score the highest positive opinions (see Table 4). Moreover, positive opinions on capital movements rise to 55% when the financial services sector is considered separately, whilst positive opinions for cross-border operations rise to 69% in air-transport and 39% for land transport.

The breakdown by sector provides more insight on how economic operators view the success of the single market in eliminating obstacles to EU trade. In sectors such as land transport, air transport and financial services, positive opinions are high, ranging from 32 to 60%. But negative opinions are still relatively high, ranging from 11 to 19%, indicating that important barriers still persist. This is particularly the case with business services, where negative opinions outnumber positive ones (19% against 17%), and to a lesser extent with

[1] *Source:* NEA study.
[2] *Source:* Cranfield University study.
[3] *Source:* Economic Research Europe Ltd study.

Table 4

Service firms' global perceptions of specific features of the single market programme (weighted by number of employees in each firm)

Measures	Opinions Positive	Neutral	Negative
Harmonization of licences	20	66	5
Recognition of licences	17	71	3
Facilitation of cross-border operations	30	60	4
Facilitation of physical establishment	17	74	1
Public procurement liberalization	16	68	6
Capital movements liberalization	25	66	1
Double taxation	18	67	1

Source: Eurostat survey, EU Member States excluding Germany.

Table 5

Service industries' perceptions of the single market impact by firm size

Firm size	Opinions Positive	Neutral	Negative
5-49	16	63	21
50-199	19	60	21
200-499	17	61	22
500-999	24	52	24
>= 1000	39	41	19
Total (EU 11)	25	54	22

Source: Eurostat survey, EU Member States excluding Germany.

information services and related activities, where the single market scores a meagre 28% of positive opinions compared to 19% of negative opinions.

The survey confirms the view that while significant progress has been made in liberalization of some service sectors, especially the traditional services (transport and financial services), barriers remain high in other service sectors.

From Table 5, we can see that larger firms are generally more positive about the SMP impact than smaller ones. One possible explanation of this is that while SMEs recognize the opportunities created by the SMP they are unable to take advantage of the situation, while having to bear the negative consequences of increased competition in their domestic markets. Meanwhile bigger businesses are more widely affected by the SMP (see the middle column) but seem to cope better with the opening up of the markets and benefit from the opportunities created.

The removal of legal barriers to entry and the easing of access conditions has had a psychological impact on service companies' perceptions of competition levels. Some 36% of land transport operators, for example, consider that competition from other EU operators has increased, with only 1% disagreeing.[1] Figures for banking and credit institutions are similar; 31% think competition has increased and only 3% disagree; in insurance, the scores are even higher — 42% and 4% respectively.

1.6.3. Conclusions

Although the Community has established a basic legal framework in many services, the SMP in services is still incomplete. Nevertheless, the most obvious restrictions have been removed and competition has increased, especially in traditional service sectors. However, full implementation of the new legislative framework has taken longer than expected, especially in the utilities. Furthermore, delays in transposing the new rules into national law have impeded progress (e.g. insurance). Non-discriminatory rules based on the protection of the general good also still obstruct the free cross-border supply of services — notably business services, information services, and commercial communications.

[1] *Source:* Eurostat Business Survey.

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Chapter 2 — The European economy since the launching of the single market programme, 1985-95

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Chapter 2

The European economy since the launching of the single market programme, 1985-95

2.1. Introduction

During the implementation of the single market programme (SMP), the Community economy has been shaped, on the one hand, by various events and 'shocks' and, on the other, by a number of long-run structural developments. Any assessment of the economic effects of the single market programme must take account of both of these. The purpose of this chapter is to set the economic scene within which to identify the impact of the SMP in the remaining chapters of the present report. Section 2 highlights the main structural trends and shocks which have affected the single market since it began to be constructed. These include the adhesion of Spain and Portugal in 1986, German reunification, structural factors such as technological change and globalization, and cyclical factors including exchange rate developments. Section 3, following a structural approach, presents a macroeconomic overview of the EU in the context of the triad between 1985 and 1995.

2.2. Structural trends and major affecting the Community economy during the development of the single market, 1985-95

During the creation period of the single market, a number of structural trends and a number of events impacted on the Community economy. In assessing as far as possible the impact of the single market, it is an essential first step to identify these structural trends and major events. Failure to do so clearly risks ascribing economic changes (whether positive or negative) to the single market programme alone, which would be spurious.

In the period 1985 to the present day, several structural trends and major events have hit the Community economy:

- globalization
- technological change
- the accession of Spain and Portugal
- oil price changes
- the October 1987 stock market crash
- German unification
- various exchange rate crises

To put these trends and events in the right context it is convenient to start by providing some information on the evolution of main macroeconomic indicators and of the influence of macro policies implemented in the EU over the period. The structure of this part is as follows. Section 2.1 will present a series of stylized facts, including the analysis of the business cycle, and will discuss policy issues. Section 2.2 analyses the two main structural trends: globalization and technological change, whilst section 2.3 is devoted to a number of events and economic shocks in chronological order.

2.2.1 Stylized facts, cycles and economic policy

Stylized facts

Although the relative weights of the EU,[1] USA and Japan in the triad's GDP recorded quite marginal changes between 1985 and 1995, the EU's share in terms of employment recorded a significant fall of more than two percentage points. In 1985, the EU represented 42% of real GDP (constant 1990 prices) in the triad as compared with 38.9% for the USA and 19.2% for Japan. Ten years later, in 1995, the share of the EU's GDP in the triad total amounted to 41.4%, against 38.8% for the USA and 19.9% for Japan. In terms of employment, the EU represented 43% of total employment in the triad in 1985 (37.2% and 19.8% for the USA and Japan respectively). This share had fallen to 40.9% in 1995, whilst it rose to 39% for the USA and to 2.2% for Japan.

Obviously, such changes are not only the result of growth and employment creation differentials. The annual average growth rates have been quite similar in the EU and the USA (2.4 and 2.5%, respectively) between 1985 and 1995, whilst GDP grew in Japan by almost 3% per year. In Japan, employment increased by almost 1.1% per year over the reference period. This is lower than in the USA, where employment grew by 1.5% per year. The figures for the EU, however, show the difficulties of a number of Member States in turning growth into jobs, as recognized in the White Paper on growth, competitiveness and employment. The EU created new jobs at a rate of only 0.4% per year.

Such a relatively poor performance of the EU in creating jobs has its counterpart in unemployment figures. Whilst unemployment fell in Japan from 2.6% in 1985 up to 2.1% in

[1] For the sake of comparability, the EU in this section refers to EU 12 without including former East Germany. All the figures reported here can be found in Tables 2, 3, 5, 6 and 8, which are analysed in detail in Section 3.

1991 and then increased by 1 percentage point to represent 3.2% of the active population in 1995, in the EU the lowest rate registered (1990) still amounted to 7.75% and increased by almost 3 points in five years. This structural trend of unemployment in the EU contrasts with a rather cyclical evolution in the USA, where the unemployment rate accounted for 5.5% of the active population in 1995, half the rate registered in the EU.

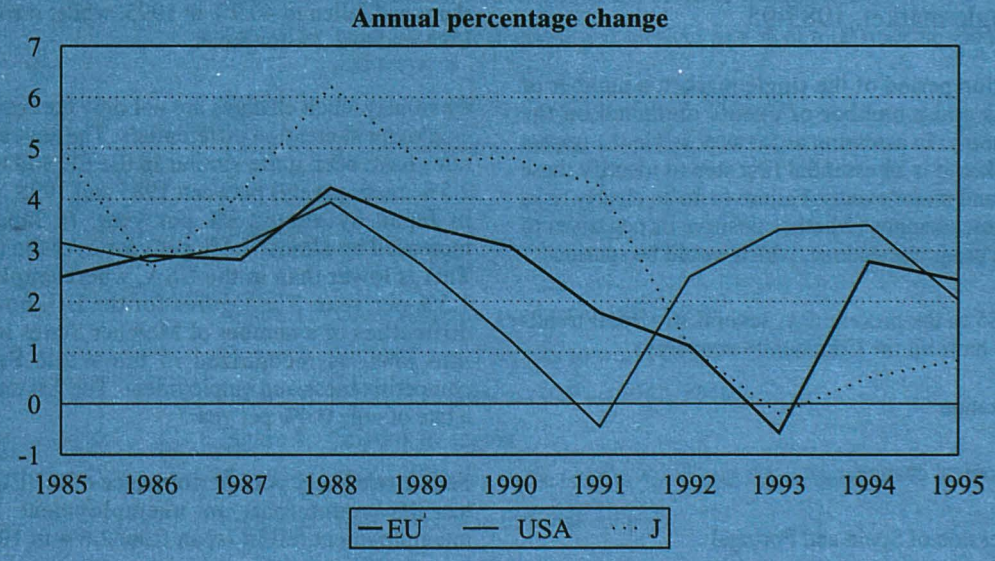
As in unemployment, the EU has recorded the highest inflation rate in the triad over the past decade. Inflation, measured by means of the annual average growth rate of the GDP deflator in national currency, amounted to 4.4% in the EU, compared with 3.1% in the USA and 1% in Japan. Such averages are quite representative of the evolution between 1985 and 1995. Although inflation rates have a strong cyclical component, the EU has always recorded the highest rates, whilst annual inflation in Japan has remained below 2.2%. Since 1993, inflation rates in the EU and USA have been converging.

Economic cycle

Between 1985 and 1995 the EU, USA and Japan all almost completed a full economic cycle, from the expansion that had started well before 1985 to the recovery of 1994-95 after the recession of 1992-93 (1990-91 for the USA, see Graph 1). The EU's GDP growth first accelerated between 1986 and 1989, peaking at 4.2 % in 1988, and then slowed down between 1989 and 1991 to give way to the 1992/93 crisis, when GDP at 1990 prices decreased 0.6% in 1993. Recovery started in 1994,[1] but growth rates in 1994 and 1995 remained under 3%, below the ones reached in the preceding expansion. Within the triad, Japan's cycle has moved in phase with the EU, although the expansion peak exceeded 6% in 1988, whilst the 1994 recovery was much weaker than in the EU; Japanese GDP only grew by below 1% over the period 1994-95. The USA, however, only shared the first part of the cycle with the EU. An almost equivalent expansion took place between 1986 and 1989, with US GDP growth reaching almost 4% in 1988, but after 1989 the slowdown was quicker so that the USA went into recession in 1991 before recovering the next year. Furthermore, the USA's recorded growth rates were higher than 3% in 1993 and 1994.

[1] Quarterly data show that recovery already had started in the second quarter of 1993.

FIGURE 1: **Gross domestic product at 1990 prices**



[1] From 1992 including former East Germany.
Source: AMECO.

Most Member States' cycles reflect the EU average. However, a number of exceptions are worth mentioning. Firstly, although their cycles moved in line with the EU average, Spain and Portugal recorded higher growth rates than the EU average over the period 1986-89 (6% in Portugal and 5.6% in Spain in 1987). Secondly, due to the reunification effect, German GDP growth reached its peak in 1990-91 (at over 5%). Third, the UK does not seem to follow the same economic cycle as the EU as a whole, but rather the US one. British GDP growth, after reaching 5% in 1988, fell within two years to -2% in 1991 before quickly recovering during 1993 and 1994 and equalling EU average growth in 1995 (2.4%). Finally, Ireland seems to be a rather special case, where catch-up effects account for a rather significant part of GDP growth over the economic cycle. Since 1987, Irish GDP has been growing at rates higher than the EU average and most Member States. GDP growth in Ireland reached almost 8% in 1990 and, although the UK's 1991 recession and the EU's recession of 1992-93 slowed down Irish growth, nevertheless it still remained above 2% in those years. Ireland returned to a high growth path in 1993 attaining 8% again in 1995.

All in all, leaving these special cases aside, it is worth noting that the GDP growth slowdown and consequent recession in the EU has been coincidental with the main phases of implementation of the SMP. As we shall see in other chapters of this report, many studies have identified significant impacts attributable to the SMP in the late 1980s. Therefore, any analysis of the SMP's effects must disentangle the negative impact of the post-1989 GDP growth slowdown and the 1992-93 recession in the EU.

Economic policy

Looking at the evolution of European economies between 1985 and 1995 and, especially, since the beginning of the 1990's, one could be tempted to say that the times when Western Europe seemed to have all the answers necessary to achieve the ultimate goals[1] of economic activity have gone. Until the 1970s the EU was an economic entity with rising living standards able to offer jobs for all and an opportunity to progress. Now, the EU seems to be immersed in a context of high unemployment, and relatively low inflation and slow growth.

This radical change has often been associated with long-run trends such as globalization and technological change and the need to adapt to them. It has also been argued that the relatively poor performances of the EU have their origin in the past activism of European governments, which has resulted in increasing public debt, large budget deficits and high taxes. Structural trends are studied in section 2.2 below; in the current section we deal with the rationale of economic policy in the EU. It should be noted, however, that 1985-95 is not the best period to look at the development of macroeconomic policy in the EU. In order to understand its rationale it is more useful to start after the second oil shock and to consider three subperiods, 1979-87, 1987-90 and 1990 to date.

The fight against inflation was the priority in the first subperiod. By 1979 European economies had not yet absorbed the first oil shock. Inflation was high and unemployment had been rising since 1973. Furthermore, both monetary and fiscal policies were expansionary, with negative short term real interest rates and increasing public deficits. In this context, monetary policy, characterized by high interest rates, became very restrictive. As pointed out by Fitoussi (1996), Germany was a case apart. The inflation rate in Germany amounted to 2.7% in 1978 and the unemployment rate had decreased to 2.7% of the active population that year, although its budget deficit had increased after 1978. It is not surprising then that Germany took the lead in monetary policy, since it had already achieved what other countries were looking for. As a consequence, the other European countries benefited from German credibility, their currencies having the DM as an anchor. Restrictive monetary policy was accompanied by restrictive fiscal policy.[2] The structural budget deficit declined between 1979 and 1987, which contrasted with the more activist economic policy and budget deficit run in the USA.[3]

As shown in Graph 1, the recovery started before 1987 and output growth in the EU reached its peak level in 1988, then decelerated and became negative in 1993. We will argue in section 3 that inflation started to decline in 1991.[4] In other words, although at the end of the 1980s inflation rates were much lower than at the beginning, the battle against inflation was not yet won. In fact, inflation rates increased from 4.1 in 1987 to 5.5 in 1991 and monetary policy continued to be somewhat restrictive.

After four years (1989-92) with real interest rates reaching historic highs, the policy mix shifted towards tighter fiscal policy and less restrictive monetary policy. The easing of monetary policy was prompted by the 1993 recession. However, one cannot characterize the post-recession period as one of expansionary macroeconomic policy in the EU. Fiscal consolidation also started in that year. The underlying rationale of today's macroeconomic policy in the EU is that, on the one

[1] As Krugman (1994) states, what is important for the economy, are factors which affect living standards, namely productivity, income distribution and unemployment.

[2] As pointed out by Fitoussi (1996) the degree of austerity varies greatly among Member States.

[3] See Krugman (1994) and (1995).

[4] Measured by the GDP deflator, see Graph 6.

hand, current public deficits in many countries are clearly unsustainable and, on the other, that lower public borrowing will reduce long-term interest rates and thus create a crowding-in effect of productive investment and private spending.

In completing the SMP the dilemma is that the single market needs dynamic demand to produce its full benefits. Therefore, so long as inflation is subdued, further easing of monetary policy combined with budgetary consolidation could be a desirable policy mix, compatible with achieving EMU and allowing the SMP to produce its full benefits. Furthermore, as concluded by the Florence European Council, budgetary consolidation should be based on rigorous control of current public expenditures, leaving room for additional efforts on public investment.

2.2.2. Structural trends

The definition of technological progress is fairly intuitive. It refers to any change in the relationship between inputs and outputs. Thus technological change means not only changes in the technology embodied in physical capital goods, but also changes in the organization of firms, as well as changes in production processes, which alters the composition and nature of human capital of the economy. On the other hand, we can say that globalization is the process whereby markets and production in different countries are becoming increasingly interdependent due to increasing trade in goods and services and flows of capital and technology.[1] Globalization and technological change are interrelated. Technological change is one of the driving forces behind globalization, and, simultaneously, globalization speeds up the technological development and diffusion. Technological diffusion and reductions in transport costs allow significantly greater interdependence world-wide. Nevertheless, globalization cannot be understood without considering the strong liberalization processes taking place around the world, including industrialized countries and, of course, the EU.

The World Bank report on Global economic prospects and the developing economies[2] shows that between 1985 and 1995 world trade has grown more than twice global output. Furthermore, developing countries have recorded large increases in international openness. Over the 1985-95 period, trade flows of developing countries grew on average 6 percentage points faster than real output growth.[2] This performance is the result of important programmes of de-regulation and liberalization of their economies, and, as stated in Hoekman and Kostecki (1995), it partly reflects unilateral efforts by those countries to open their economies to foreign competition. Furthermore, these policy reforms are leading to greater competitive pressures and adjustments in industrialized countries. In this context, the SMP can be viewed as the EU's coordinated response to these pressures by providing a more competitive and flexible economic environment, which allows European firms to adapt better to changes in the world economy.

By raising productivity, efficiency and more rational use of resources, globalization and technological progress have raised, and will continue to raise, global incomes. Nevertheless, the growing importance of technological progress and globalization are also often given as two causes of today's persistently high unemployment levels amongst low-skilled workers in the EU. On the one hand, current technological progress is leading to the replacement of unskilled workers by labour with a higher content of human capital.[3] On the other, globalization has helped the emergence of a growing band of developing economies able to compete with the EU as producers and exporters of manufactured products.

Currently, as indicated by Sapir (1996), economic literature most often identifies technological progress as the more important of the two, especially as 'emerging' economies, although increasingly important, are still rather marginal in trade terms. In the future, continuing globalization will pose an increasingly important challenge for the Community. However, this challenge will be less the more workers can shift from import-competing manufacturing activities to the non-traded service sector. Clearly, economic growth and market flexibility will be a requirement to meet the challenge. The SMP may help to ensure that the Community can absorb unskilled labour in new activities because it enhances market flexibility by raising the EU's growth prospects and stimulating European businesses' ability to react and compete in an increasingly dynamic global economy.

Globalization

The world economy is becoming increasingly 'globalized'. Trade integration amongst industrialized countries has been rising over the last two decades and emerging economies in Asia and in central and eastern Europe are becoming increasingly important trading partners. Such 'globalization' is reflected in increased sales on extended (international) markets[4] and an unprecedented surge of foreign direct investment (FDI — see discussion in Chapter 5). Driving forces behind this market globalization have been the progress in transportation and communication technology, liberalization of trade and investment, plus changes in enterprise organization and strategy.

[1] See OECD (1993).
[2] See World Bank (1995).
[3] See Krugman (1996), chapter 12.
[4] See the Competitiveness report, European Commission (1996b).

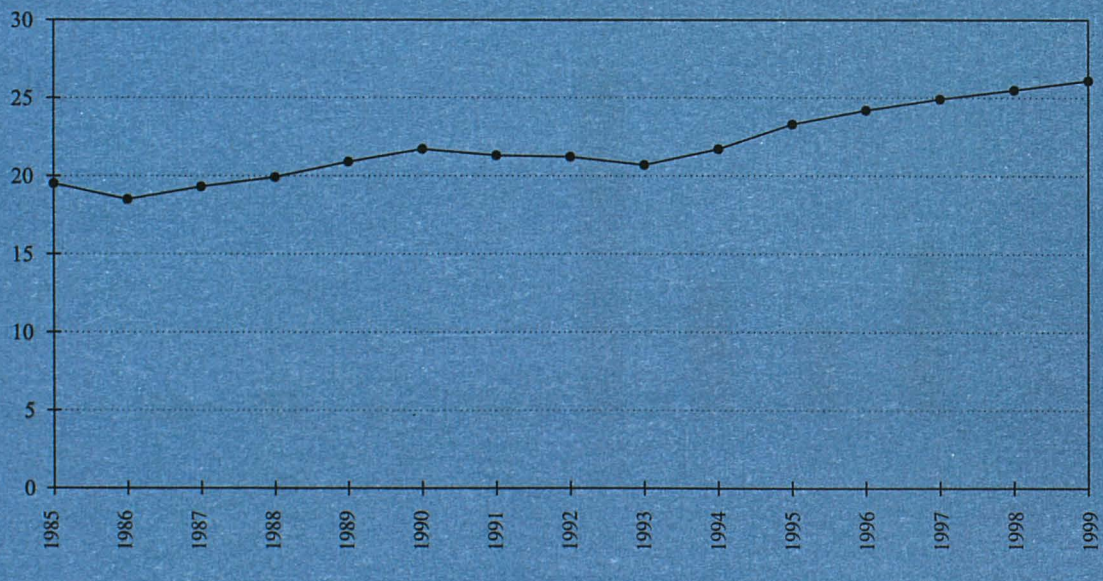
Several trade indicators provide direct and easily available measures of the degree of world-wide globalization. A recent DRI[1] report shows that the ratio of world exports to world GDP was around 19% in 1985, reached 20% in 1988 and then 23.5% in 1995 (see Graph 2). However, this indicator conceals important regional and country differences. Graph 3 compares the same ratio in 1985 and 1995 in a number of regions across the world. Developing Asia[2] has experienced the highest increase. Its exports to GDP ratio was over 40% in 1995, compared with just more than 25% in 1985. The degree of globalization of Europe, meanwhile, has remained relatively stable (around 30%, including intra-EU trade) over the last decade. In other words, 'globalization' is far from a new phenomenon in European countries. Finally, against seemingly conventional wisdom, developed Asia was the least open region in 1995 (less than 15%) and it seems to be becoming less and less 'globalized'.

Figures on imports can also give useful insights about the degree to which the world economy is internationalized. European imports in 1995 were clearly double US and developing Asia's imports, and triple imports by developed Asian countries, whilst the relative weight of Latin America, the Middle East and Africa was rather marginal. The long-run trends shown in Graph 4 demonstrate again that internationalization or globalization is a secular characteristic of the European economies by comparison with other parts of the world, even if it is acknowledged that such a globalization trend exists at the world level. In fact, Graphs 3 and 4 seem to suggest that growing openness affects certain regions such as North America, developing Asia, Middle East and Africa, more than the EU, where trade openness was already higher than 30% in 1985, or Japan that shows a quite low and seemingly declining openness ratio.

Focusing on the Community, we have seen above how globalized it is. Currently, extra-EU exports of goods and services account for about 10% of Community output (EU 15). Whilst the share of these exports in GDP has, as remarked just above, increased only modestly over the last two decades, since prices on internationally traded products have risen slower than the overall price level, this masks the fact that the EU's international trade (like at the world level) has expanded at a considerably higher pace in volume terms than overall ouput growth.

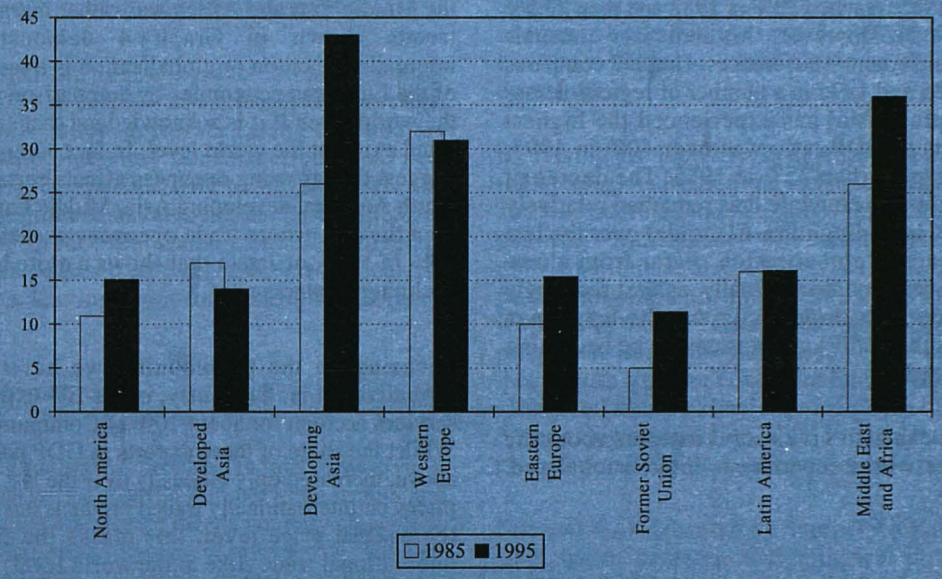
[1] See DRI (1996).
[2] Includes China and the NICs.

Figure 2: **Ratio of world exports to world GDP**



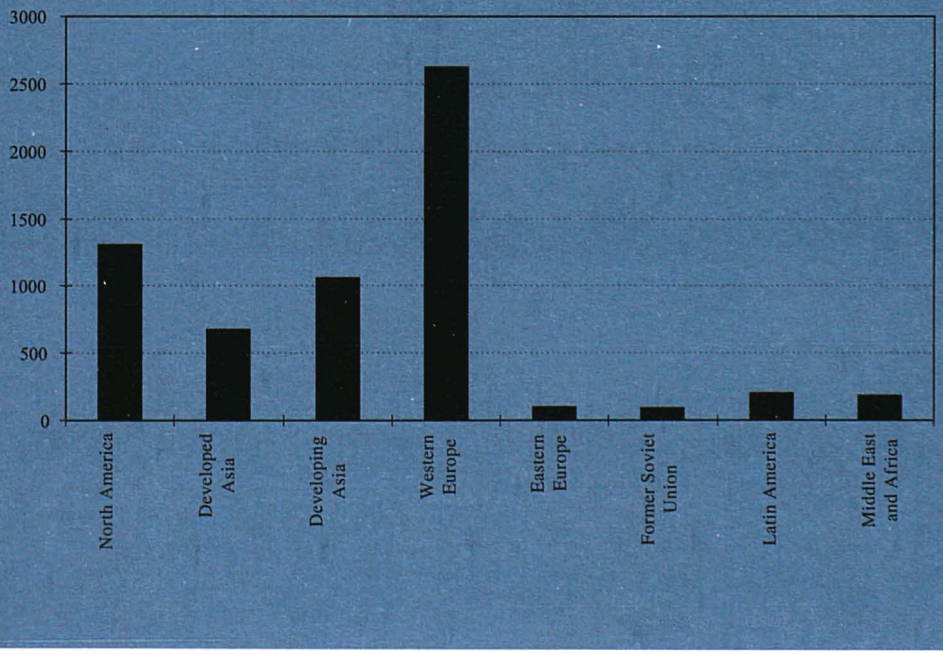
Source: DRI.

Figure 3: **Ratio of exports to GDP — 1985, 1995**



Source: DRI.

Figure 4: **Imports by region; billions of USD in 1995**



Source: DRI.

Furthermore, the Community is a major participant in world trade. Its share in world merchandise exports (excluding intra-EU trade) remains high at 23%, although this has tended to decline since the early 1970s. This fall is to some extent explained by a comparatively low share of Community exports in strong-demand, high-technology sectors relative to the US and Japan (26% of total exports from the EU against 30% in the US and 35% in Japan[1]) (European Commission (1996)). In addition, the Community has a comparatively low share of exports directed towards markets which have been growing fast, partly due to geographical factors. For example, exports to the NICs and China, where import growth rates would appear to be particularly promising over the medium term, represent only 14% of extra-EU exports, against 23% in the US and 27% in Japan. However, the Community is well placed to benefit from the expected strong growth of trade with central and eastern European countries (CEECs) in coming years. In 1994, around 9% of extra-EU exports (EU 12) were directed towards the CEECs and the former Soviet Union, and such exports subsequently expanded by around 15 to 20% per year in 1994-95 (measured in value terms).

Meanwhile, recent flows of foreign direct investment around the world have grown significantly, up from an annual average of USD 50 billion between 1981 and 1985 to an average of USD 155 billion between 1986 and 1990. In 1990 they reached USD 200 billion; in 1994, USD 220 billion; and, in 1995, a record USD 325 billion (Unctad (1996)). The EU has been taking an increasing share of this growing wave, up from a quarter of all such FDI flows in the early 1980s to well over 40% in 1993 (see the discussion on FDI in Chapter 5).

Overall, then, it is generally believed that the Community economy is strongly affected by globalization. Moreover, it and its partners stand to gain in overall terms from this increased international integration. Nevertheless, concerns remain that certain groups within the Community may lose out. In particular, rising unemployment among low-skilled labour in most European countries has been attributed to increased competition from low-wage countries. However, it is very difficult to separate the effects of increased international trade from the effects of technological changes, which also appear to reduce demand for unskilled labour. One recent review of available evidence concluded that competition from low-wage economies has only had a small negative impact on EU employment in some sectors, and this may well have been off-set by rising employment in other sectors. Trade with developed economies has in general had larger positive and/or negative effects.

Technological change and information technologies[2]

Information and communication technologies (ICT) are producing dramatic changes in the EU economy, by moving it from a situation in which manufacturing activities have dominated to a situation where most growth and value added was fostered by the development of services, particularly in activities concerned with the creation, processing and transmission of information.

ICT[3] is also introducing fundamental changes to the organization of enterprises, the way of working and the upward and downward relationships between sectors.

[1] 'European competitiveness in the triad', Note for the attention of the EPC, Commission Services 1995.

[2] Many of the issues and data discussed is this section are based on the already referenced DRI report.

[3] Core sectors include:
- computer and electronic data communication equipment;
- telecommunications equipment and services;
- software products and computing services: systems software and utilities, applications software, professional services, processing services, and network services.

Table 1

ICT expenditure as % of GDP (current prices)

	1992	1995
Austria	3.52	3.94
Belgium/Luxembourg	3.99	4.37
Denmark	4.24	4.71
Finland	3.65	4.50
France	3.82	4.32
Germany	4.21	4.61
Greece	2.75	3.59
Ireland	4.26	4.56
Italy	2.48	3.18
Netherlands	4.64	5.32
Norway	4.63	5.47
Portugal	3.19	4.50
Spain	2.40	3.15
Sweden	4.03	6.00
Switzerland	5.69	6.13
United Kingdom	4.52	5.32
Western Europe	3.80	4.46
US	5.65	5.71
Japan	4.15	3.66

Source: EITO, 1996, p. 332.

The rapid diffusion of ICT is explained by substantial productivity increases that accrue to user industries as well as by the declining cost of such technologies and their continuous improvement. Over the period 1988-96 western European information technologies market grew at the average annual rate of 6.5%.[1] Table 1 provides indications of ICT penetration in recent years, in terms of ICT expenditure to GDP (current prices). Western Europe's share has increased substantially, up from 3.8% in 1992 to 4.5% in 1995.

In manufacturing, ICT does not mean anymore simply the 'automation' of production. Most sectors are at present much more influenced by innovations which do not relate directly to new production techniques, but to the organization of the design, production, marketing and administration functions via the use of information network systems. For example, in sectors subject to rapidly changing demand patterns (e.g. clothing, footwear, automobiles), the adoption of computer-integrated flexible manufacturing systems and computer-based quick response strategies have considerably shortened the production and innovation cycles, rendered possible rapid design changes in accordance with changing consumer preferences, and reduced delivery time.

Since the late 1980s, all service sectors are also increasingly using ICT. Financial services, which were at the forefront of ICT applications in the 1970s, represent one of the largest end-user markets for ICT. The expenditure of financial services on ICT equipment accounts at present for more than 15% of expenditure on ICT equipment in the whole economy of the EU.[2] ICT is important to the distribution sector for handling logistic and stock management systems, as well as all segments of the transport industry, yielding quality improvements in transport services. In the passenger transport and tourism sectors, computerized reservation systems are becoming widespread, substantially increasing the efficiency of travel and tourism transactions. Business services are increasingly integrating ICT advances (accelerating external sourcing of business services and the development of tele-working).

ICT is changing the organization of companies and work conditions. ICT applications:

(a) reduce the minimum optimum scale of enterprises (the downsizing phenomenon);

(b) flatten the internal hierarchies of enterprises and redefine the functions of middle and even top management;

(c) require new skills at all levels of the workforce.

As the efficiency of ICT systems increases (largely through networks), a lot of control and administrative functions concerned with the transmission of information are becoming obsolete. Manual, mechanical and chemical processes are (and will increasingly be) substituted by computerized machines. Face to face and direct services will more and more be replaced by self-service machines (e.g., automated telling machines or voice response systems, automated answering and call forwarding, electronic credit checking, etc.). This implies that ICT is reducing the impact of lower-skilled labour and that the trend is towards an increasing intensity in skill requirements related to the usage of ICT. This will take several forms: a strong persistent demand for specialized high-level computer-related skills, a rapidly growing demand for multiskilling (computer, communications and business skills), and a need for increased communication skills.

2.2.3. Events

The accession of Spain and Portugal

In January 1986 Spain and Portugal became members of the European Union. As discussed in Section 3 below, the two new adherents represented at that time around 8.7% of EU 12 GDP and 12.1% of employment. Although, from a quite narrow trade policy viewpoint, entry arrangements mainly concerned the bilateral removal of tariffs, quotas and other similar trade-suppressing measures, as well as the adoption of the EU's common external tariff, the enlargement coincided with the introduction of the SMP. This means that, although the SMP effects did not start to be felt until 1988/89, Spanish and Portuguese economies simultaneously experienced (during the reference period of this report) both the classical effects of joining a customs union and the early impacts of implementing the SMP. Such simultaneity amplified the expected effects of a classical customs union.[3]

Since the transitory periods following accession and implementation of the SMP partly coincided, analysis of the SMP impacts alone necessitate isolation of the accession

[1] See European Information Technology Observatory: EITO, 1996, p. 282.

[2] ICT have been a vital ingredient for the most important developments in financial services. Examples include automatic teller machines, electronic fund transfer, systems for credit and debit cards, automated cash transfers for corporate customers, and home banking or direct banking.

[3] See, for example, the empirical evidence on the likely additional impact of the SMP on Spain by Hine (1989) and Martinez and de Boer (1996), which show that the tariff changes seem to understate the considerably increased import competition actually faced by Spanish industry.

impacts. Given Spain and Portugal's small relative weights in total EU trade, one can accept the small country hypothesis in order to analyse the 1986 enlargement impacts. In other words, accession alone could have had significant impacts on the two countries, but negligible impacts for the EU economy as a whole. In the Spanish case, the trade deficit jumped from 3.5% of GDP in 1984 to 6.1% in 1992.[1] Furthermore, the trade deficit in manufactured goods changed from an average surplus of 0.9% over the period 1979-85 to an average deficit of 3.8% over 1986-92, mainly explained by the sharp increase in imports of manufactures. Manufacturing exports remained almost constant (averaging 9.8% of GDP in the period 1979-85, and the same average over 1986-92), whereas imports rose sharply from 8.9% of GDP in the period 1979-85 to 13.6% over 1986-92. Martinez and de Boer (1996) estimate that Spanish accession to the EU resulted in net trade creation, amounting to ESP 3 000 billion[2] in 1992, or around 4.5% of Spanish GDP in that year. These figures are not negligible for the Spanish economy but, on the one hand, such estimates include early SMP-associated pro-competitive accumulated effects and, on the other hand, such trade creation only represents around 0.3% of EU GDP, and was distributed widely amongst all Member States, as well as other industrialized countries (EFTA, the USA and Japan). Summarizing, in considering the *anti-monde*, the enlargement impact net of SMP effects is marginal for the EU as a whole.

The fall in oil prices during 1985 and 1986

Between 1985 and 1986, the Community was enjoying accelerating real GDP growth, slight growth in its nominal current account surplus and falling inflation (European Commission (1986)). Part of the explanation for this lay with tumbling oil prices, which fell from a range of USD 25-30 per barrel to USD 10-15 per barrel, a decline of over 45%. As the US dollar was simultaneously depreciating against the ecu, the proportionate fall measured in European currencies was even greater (55%). Given the important role of oil as a source of EU energy this was clearly bound to have large effects.

In the short term, there were two clear direct effects: firstly, positive income transfers from oil-producing countries to net oil importing countries and, secondly, widespread cuts in the production costs of oil users. Such income transfers were clearly strongest for Member States most dependent on oil imports, such as Portugal or Germany. On the other hand, as major oil producers, the UK and the Netherlands were adversely affected. The more significantly positive (negative) such transfers were, the more positively (negatively) national economic growth was affected.[3]

The stock market crash of October 1987

During 1987, fuelled by the oil price falls discussed immediately above plus relatively loose monetary policy, real EU GDP growth continued to accelerate, reaching 2.8%. Deregulation of financial markets around the Community at this time helped to fuel a world-wide speculative bubble in equity and property markets that had begun in the mid-1980s. This burst in October 1987,[4] threatening consumption and investment, as well as a potential liquidity crisis, with risks for overall growth (European Commission (1994)). Acting in response to such risks, Member State authorities adopted policies of substantially looser monetary and budgetary policies.

These policies were probably very effective in preventing excessively adverse effects on overall confidence, but they also excessively stimulated the Community economy. As a result, as well as thanks to factors such as the SMP, better investment profitability, financial liberalization and delayed effects of the reduction in oil prices (see above), the pace of economic activity increased sharply. Unemployment rates fell whilst the recorded rate of growth in the Community in 1988, over 4%, was the strongest since 1976. However, the economy was overheating with real growth estimated to have overshot potential output growth by up to 1.5 percentage points (European Commission (1996)).

In response to the Community-wide economy's unexpected dynamism, and to avoid sparking renewed inflationary pressures, Member States began tightening monetary policy again from mid-1988 onwards. Budgetary policy, on the other hand, was only moderately tightened as many countries

[1] See Martinez and de Boer (1996).

[2] ECU 22.6 billion in 1992.

[3] For the Community as a whole, *ex ante* analysis (European Commission (1986)) of the price cuts implied an income transfer up to the equivalent of 1.8% of EU GDP. However, the magnitude of the income transfers ranged widely amongst individual Member States (according to their degree of dependence on oil imports) from +4.1% for Portugal to -0.8% for the UK. This was expected to lead to more rapid real EU GDP growth achieving, at an upper bound, an increase in the real level of EU GDP after two years of about 1.5% over and above what would have occurred without the oil price change. Most Member States fiscal situations were also expected to be eased by the price changes, thanks to lower energy expenditure (by between 0.1 and 0.5% of GDP) and a faster growing tax base. There were other expected benefits too. Diminished inflationary pressures (except in the UK, where the falling oil price was expected to lead to depreciations of the pound sterling) promised an overall estimated up to 2 point decline of the inflation rate over two years. Such an impact on inflation was in turn expected to prompt major falls in nominal long-term interest rates (down 2.0 points between July 1985 and July 1986). Borrowers would benefit from such developments so strengthening demand, but the falling oil price and associated disinflation reduced the need for tightening of macroeconomic policy.

[4] Equity prices fell by a third in just a few days.

continued to implement previously announced tax cuts. Nevertheless, notwithstanding the monetary tightening and its dampening effect on economic activity, the Community economy grew by 3.5% in 1989, still faster than potential growth. Capacity utilization consequently reached record levels and inflationary pressures grew — thanks in part to strong import price increases, inflation recorded a significant acceleration to nearly 5% in 1989 and over 5% in 1990, against 3.9% in 1988.

October 1990 and after — German unification and its economic consequences

From a peak of over 4% in 1988, Community GDP growth slowed to about 3.5% in 1989 and 3% in 1990. Inflation, meanwhile, had been growing in the same period because of the pressures discussed immediately above in Section 2.3. It was at this time that, along with the rest of the formerly Comecon countries, East Germany's socialist government fell from power during the momentous events of 1989. The two parts of Germany then formally unified as one country in October 1990.

Unification, and the policies adopted to handle it, were to have powerful economic and monetary consequences, not just for Germany, but also the rest of the Community through intra-Community trade impulses as well as interest-rate and exchange rate adjustments. In a first stage, demand-driven increases of German and other Member States' GDP growth rates. In a second stage, overheating in the German economy which led to monetary tightening by the German monetary authorities, measures then followed by the rest of the Community.

The driving force for these powerful effects was the fact that unification, combined with the decision to convert Ostmark into DM at a rate of 1:1, created a huge gap between aggregate German supply and demand (and as Germany is the largest economy in the Community, this had major consequences for other Member States). East Germany's supply-side could not compete at all, and so contracted dramatically[1] and demand there had to be supported by huge transfers (equivalent to about 5% of GDP per year) from the west part of Germany. These transfers were financed mainly by a higher public-sector deficit, which deteriorated to more than 3% of GDP within the year following unification. Much of these considerable current and capital transfers were converted as far as possible into additional demands mostly addressed to West German firms, given their comparative advantages (geographic proximity, common language, common currency), but also firms elsewhere, particularly in other Member States.

[1] Industrial production fell 60 to 70% in the first 12 months after unification.

In the first 12 months after unification, purchases by the five new *Länder* from the rest of the world including West Germany went up from DM 18 billion to about DM 130 billion, an amount close to the equivalent of public transfers received by those *Länder*. At the same time all other EU countries except Greece registered considerable upswings in their bilateral trade with Germany.

As unified Germany's domestic demand grew vigorously, the effects were predictable. The current-account swung from surpluses equal to 4 to 5% of GDP between 1986 and 1989 to a deficit of almost 1% of GDP in 1992. Meanwhile, GDP growth in western Germany reached 5.1% in 1990 (indeed, almost 6% in the last two quarters of 1990 and the first quarter of 1991). Such rates were significantly above potential, so capacity constraints soon began to be felt in the form of labour market tensions and price increases. Wage increases accelerated from a roughly 3% a year trend in the period 1987-89 to 4.7% in 1990 and 5.8% in 1991 whilst inflation reached rates of about 4% in 1991 and 1992.

Meanwhile, the induced boost to west Germany's final demand from east Germany in turn resulted in increased imports addressed to the rest of the world, especially other EU Member States, putting upward pressure on their growth rates too.[2]

Various exchange rate crises

Since the crisis in the EMS exchange-rate mechanism in September 1992, a number of European currencies depreciated sharply against the German mark. Such was the case between August 1992 and August 1995 with the Italian lira (31% depreciation), the Swedish krona (27%), the Spanish peseta (24%) and the pound sterling (18%). This period of turbulence on the foreign-exchange market has been marked by three important events: the departure of the pound sterling and the Italian lira from the EMS exchange-rate mechanism in September 1992, the decision in August 1993 to widen the mechanism's margins of fluctuation to 15%, and the sharp depreciation in the US dollar in February and March 1995, which contributed to the depreciation of a number of European currencies.

At the moment when the September 1992 ERM crisis broke, the EU's GDP growth had been decelerating, and was under 1% per year. Inflation was also slowing, down from about 6%

[2] It is estimated that their growth rates could have been raised by about half a percentage point a year on average in both 1991 and 1992 (European Commission (1991)). The amplitude of these positive effects on the different Member States, of course, depended not only on the relative importance of exports to Germany in total exports but also on the share of exports to GDP. Thus, the smaller, open economies having close ties with Germany such as the Benelux countries and Denmark, were more positively affected, in relation to GDP, than the larger countries.

per year in 1991 to around 5% in 1992. The crisis broke when the German monetary authorities reacted to domestic developments due to the unification process by tightening monetary policy, thus raising interest rates. Meanwhile, other Member States' growth rates were falling and their fiscal positions deteriorating. The general response of those Member States to this was moderately restrictive fiscal policy with looser monetary policy via lower short-term interest rates. However, the contradiction in this policy with that of Germany was ultimately unsustainable, and following the political difficulties which surrounded ratification of the Maastricht Treaty, the existing ERM exchange rate parity grid amongst Member States came under severe strain — leading finally to the ERM crisis of September 1992 (European Commission (1993)).

During 1994, real Community GDP recovered from 1993's recession to grow by about 3%. Meanwhile, the inflation rate continued the decline it had begun in 1991. Then, between December 1994 and April 1995, the US dollar fell 12% relative to the Deutsche mark, having already fallen 10% during 1994. The fall of the dollar, combined with uncertainties surrounding budgetary/inflation prospects in some Member States, triggered significant intra-European currency movements. The Italian lira fell by around 13% in nominal effective terms, and the pound sterling and the Swedish krona weakened considerably. Within the ERM, the central rates of the Spanish peseta and Portuguese escudo were devalued in March 1995. Conversely, the German mark and currencies closely tied to it strengthened significantly in trade-weighted terms, by up to 6% between December and April.

In 1995, the Commission's services carried out an examination of the impacts of recent exchange-rate movements on the operation of the internal market and on the economic growth of the Union and its Member States.[1] A number of phenomena were identified. First, growth decelerated. The currency turmoil (dollar related effects included) and the sudden changes in current or anticipated profitability stemming from it engendered uncertainty and a wait-and-see attitude among economic agents, leading to a slowdown in growth in 1995. Second, the effects of the currency fluctuations between 1992 and 1995 on long-term cost competitiveness vary. Of those Member States whose currencies have depreciated, some recorded appreciable gains in cost competitiveness (Italy, Sweden), while others experienced falls (Spain) and yet others recorded no change (United Kingdom). Of those Member States whose currencies appreciated, some saw their cost competitiveness decline (Germany), while others remained stable (France). Third, an appreciable effect on profit-margins was observed. Exporters in countries whose currencies depreciated improved their margins since 1992 whereas exporters in the other countries have reduced their margins. Finally, the impact at some sectoral and regional levels was more visible. In the car and clothing industries, for example, an erosion of margins and a fall in exports in volume terms were noted in countries with stable currencies. Some frontier regions close to countries whose currencies have depreciated were also experiencing specific difficulties.

[1] See European Commission (1995a and b).

2.3. Macroeconomic overview

We start this section by providing some indicators of the relative weight of the European economy in the triad. Then we analyse the structure of aggregate demand in the former 12 Member States as compared with the USA and Japan. Subsection 3.3 looks at GDP growth rates and their components, and includes an analysis of the evolution of unemployment in the triad. Subsection 3.4 is devoted to an analysis of inflation and labour costs during the reference period, whereas section 3.5 presents the main features of the open sector in the triad. Finally, Section 3.6 deals with the European economies' sectoral structure.

Table 2

Real GDP at 1990 prices within the triad

	1985	1990	1995[1]	1995[2]
B	3.2	3.2	3.2	3.1
DK	2.3	2.1	2.2	2.1
D	24.6	24.7	25.2	27.0
EL	1.5	1.4	1.4	1.3
E	7.7	8.1	8.1	7.9
F	19.8	19.7	19.4	18.9
IRL	0.7	0.7	0.9	0.9
I	18.2	18.0	17.8	17.3
L	0.2	0.2	0.2	0.2
NL	4.7	4.7	4.8	4.7
P	1.0	1.1	1.1	1.1
UK	16.1	16.1	15.9	15.5
EU	100	100	100	100
EU	42.0	41.9	41.4	42.0
USA	38.9	37.8	38.8	38.4
J	19.2	20.3	19.9	19.7
Triad	100	100	100	100

[1] Without including former East Germany.
[2] Including former East Germany.
Source: AMECO (DG II).

Table 3

Employment within the triad

	1985	1990	1995[1]	1995[2]
B	2.9	2.8	2.8	2.7
DK	2.0	2.0	2.0	1.9
D	21.2	21.0	21.7	25.3
EL	2.9	2.7	2.9	2.8
E	8.8	9.5	9.2	8.9
F	17.1	16.7	17.1	16.4
IRL	0.9	0.8	0.9	0.9
I	16.8	16.1	15.3	14.4
L	0.1	0.1	0.2	0.2
NL	4.5	4.7	5.1	4.9
P	3.3	3.3	3.4	3.2
UK	19.7	20.1	19.5	18.5
EU	100	100	100	100
EU	43.0	42.6	40.9	41.9
USA	37.2	37.7	39.0	38.4
J	19.8	19.7	20.2	19.7
Triad	100	100	100	100

[1] Without including former East Germany.
[2] Including former East Germany.
Source: AMECO (DG II).

2.3.1. The European economy in the triad. GDP and employment, 1985-95

In 1995, the EU,[1] including former East Germany, represented 42% of real GDP (constant 1990 prices) in the triad, as compared with 38.4% for the USA and 19.7% for Japan. The so-called big four (Germany, France, Italy and the UK) accounted for almost 79% of EU GDP that same year, whilst Spain and Portugal, which acceded in 1986, represented around 9%. The last two columns of Table 2 indicate that former East Germany only accounted for around 2% of European GDP in 1995. In terms of employment (see Table 3), the EU represented 41.9% of total employment in the triad in 1995 (38.4% and 19.7% for the USA and Japan respectively), whilst the big four accounted for 74.6% of the EU's total employment, as compared with 12.1% for Spain and Portugal and 3.5% for the new *Länder*.

Since comparable data for former East Germany are not available before 1991, we restrict analysis of the evolution of real GDP and employment in the EU to the first three columns of Tables 2 and 3. In terms of both GDP and employment, the EU's share in the triad, excluding former East Germany, steadily decreased between 1985 and 1995. Since the USA's share of the triad's GDP remained quite stable in that period, much of the fall in the EU's share was gained by Japan. However, in employment terms, the USA recorded the highest growth.

Concerning Member States, although the GDP of Spain, Portugal, The Netherlands, Germany and, above all, Ireland (from 0.7% to 0.9%) grew faster than the EU average, the relative weights do not seem to show any drastic changes. This also applies to the distribution of employment within the EU. Nevertheless, the best relative performance is found in Luxembourg (which doubled its share), Spain, The Netherlands, Germany and Ireland (in the second half of the period).

2.3.2. The composition of the aggregate demand

Real GDP has been broken down into the main four components of aggregate demand: private consumption (PRC), public consumption (PC), gross fixed capital formation (GFCF) and the external balance. Table 4 depicts the relative weight of the first three components (real GDP is equal to 100 for each country) in 1985 and 1995, which accurately represent differences in the composition of aggregate demand across countries over the period. The main feature to note from this table is that the EU and USA have rather similar rates of public consumption (around 16/17%) despite the fact that the public sector is larger in the EU than in the USA and investment (18/19%) This contrasts with Japan, where public consumption is small (around 10%), whilst investment rates are relatively high (always above 26%). Differences concerning private consumption between the EU and USA are mainly due to differences in the external balances, which have been positive in the EU (and Japan) but negative in the USA over the 1985-95 period.

Direct comparisons between the EU and the other two members of the triad conceal significant heterogeneity amongst Member States. Diversity within the EU is so large that is practically impossible to find a 'representative' Member State for the EU average. Surprisingly, apart from a higher GFCF rate, which is compensated by a lower external balance, Spain was the country with the highest degree of similarity with the EU average in 1995. The most drastic changes in structure of aggregate demand are found in Germany, Spain and Portugal. These changes relate to reunification and accession. Between 1985 and 1990[2] private consumption accounted for 60.5% of GDP in Germany (PC 13%, GFCF 20%). However, in 1995, although public consumption fell by less than 1 percentage point, private consumption and investment rates respectively

[1] Since the period of reference is 1985-95 and, thus, prior to the accession of Austria, Finland and Sweden, by EU we will understand EU 12.

[2] Without including former East Germany.

Table 4

Real private consumption (PRC), public consumption (PC) and investment (GFCF) in the triad as a % of GDP

	1985			1995		
	PRC	PC	GFCF	PRC	PC	GFCF
B	62.68	16.55	14.94	63.26	14.25	18.09
DK	54.22	26.48	17.93	54.14	24.13	15.58
D[1]	60.48	13.64	19.50	64.56	12.26	22.24
EL	69.92	14.96	23.19	74.71	14.60	23.27
E	61.91	14.08	17.61	61.57	16.48	21.86
F	59.70	18.99	18.79	59.99	19.12	19.20
IRL	61.48	19.43	18.37	53.01	13.36	15.37
I	58.57	18.33	18.98	59.56	17.06	17.59
L	64.62	13.85	15.38	62.64	13.19	26.37
NL	59.62	15.23	20.24	59.34	13.80	20.07
P	62.47	15.01	21.79	67.44	16.10	28.62
UK	59.00	22.54	17.49	62.71	20.51	17.06
EU[1]	59.91	17.56	18.71	61.86	16.47	19.68
USA	66.26	18.17	18.29	66.91	15.94	19.42
J	58.15	10.22	26.25	58.67	9.54	29.82
Triad	62.04	16.39	19.99	63.17	14.90	21.58

[1] 1995: including former East Germany.
Source: AMECO (DG II).

had jumped by 4 and 2 points, thus reducing the external balance by more than 5 percentage points. Structural changes in Spain and Portugal were also significant. Both countries saw increases in the relative weight of public consumption and investment at the expense of drastic falls in their external balances. The structural change was particularly sharp in Portugal, where the share of private consumption increased 5 points. Finally, the Irish situation is totally different. Its external balance has steadily increased from 1985 to 1995, compensated by significant falls in other components of aggregate demand, especially public and private consumption. Indeed, Irish private consumption in 1995 was lower than in Japan, whilst investment rates were comparable to Belgium and its share of public consumption close to Luxembourg or The Netherlands.

2.3.3. GDP growth, factor accumulation and unemployment

The components of GDP growth

Table 5 presents the annual average GDP growth rates in the triad over the period 1985-95, and decomposes them into three components: growth explained by labour accumulation (second column), by capital accumulation (third column) and by total factor productivity (TFP, fourth column). Total factor productivity is the part of growth not explained by factor

Table 5

Components of real GDP growth in the triad, 1985-95

	GDP growth	GDP growth explained by labour	GDP growth explained by capital	TFP
B	2.19	0.24	0.88	1.08
DK	1.74	–0.02	0.26	1.49
D	2.58	0.45	0.82	1.30
EL	1.54	0.56	0.99	–0.01
E	2.93	0.89	1.36	0.68
F	2.16	0.20	0.90	1.07
IRL	4.75	0.87	0.77	3.11
I	2.05	–0.12	0.76	1.41
L	3.44	1.78	1.46	0.20
NL	2.52	0.80	0.98	0.75
P	3.11	0.21	1.66	1.25
UK	2.27	0.17	0.78	1.31
EUR12	2.35	0.30	0.85	1.19
USA	2.53	1.11	0.65	0.77
J	2.96	0.60	1.51	0.85
Triad	2.53	0.66	0.93	0.94

Source: AMECO (DG II) and own calculations.

accumulation, and is calculated as GDP growth minus the part of GDP growth which can be explained by labour and capital accumulation combined. Overall, we can say that TFP represents efficiency gains.[1] High TFP means that one can obtain more output with the same factors. Given the way we measure labour (in persons employed) and capital (capital stock), TFP growth represents here the effect on overall growth of such changes as hours effectively worked, changes in the composition of labour skills, the introduction of new investment goods embodying new, more efficient techniques, human and knowledge capital accumulation, as well as efficiency improvements induced by, for instance, pro-competitive effects of trade.

Apart from cyclical factors, which explain some differences depending on the subperiod considered, the EU and the USA have respectively been growing at an annual average rate of 2.4% and 2.5% between 1985 and 1995. This is 0.5% per year on average lower than the rate recorded by Japan. The USA and Japan show lower TFP growth rates than the EU (0.77% in the USA and 0.85% in Japan, compared with 1.2% in the EU). More than 70% of the Japanese growth registered since 1985 is explained by factor accumulation, whilst TFP explains 50% of the GDP growth rates in the EU and 30% in the USA. Table 5 also shows that the contribution of labour to the European growth is marginal (0.3% per year), whilst physical capital accumulation and TFP account for more than 86% of the growth registered during the period of reference.

Only three European countries, Ireland, Luxembourg and Portugal grew by above 3%. These three countries plus Germany (2.6%), Spain (2.9%) and The Netherlands (2.5%) recorded growth rates higher than in the EU as a whole. The contribution of employment to growth in Spain, Ireland, Luxembourg and The Netherlands is comparable to the USA and/or Japan, whilst all the Member States, except Denmark, record a contribution of physical capital to growth higher than in the USA, (indeed in Portugal, even higher than in Japan). Concerning TFP growth, four Member States — Greece, where it is negative, Spain, The Netherlands and Luxembourg —exhibit lower rates than Japan and/or the USA. Finally, it is worth noting that the growth recorded in Germany (2.6%) during the decade is mainly due to the rates registered during 1988-91 and, especially during the last two years of this subperiod, when direct effects of reunification boosted growth by more than 5%. Such high GDP growth rates in Germany were accompanied by a relatively high TFP growth (by 1.3% per year).

Employment and capital accumulation

In Japan employment increased by almost 1.1% per year between 1985 and 1995, and capital stock grew at a rate of 4.8% per year (see Table 6). The USA, on the contrary, registers the highest labour growth rate (1.5%), but the lowest capital accumulation rate (1.92%). The figures for the EU, however, show the difficulties of a number of Member States in turning growth into jobs, as recognized in the White Paper on growth, competitiveness and employment. Employment grew in the EU by only 0.4% per year.

Table 6

Employment and capital accumulation in the triad, 1985-95

	Employment growth	Capital accumulation
B	0.26	2.64
DK	0.24	1.37
D	0.38	2.38
EL	0.65	2.77
E	1.12	3.65
F	0.51	2.27
IRL	1.36	2.23
I	-0.57	2.25
L	2.87	3.94
NL	1.73	2.44
P	0.71	4.41
UK	0.36	2.16
EU	0.39	2.42
USA	1.51	1.92
J	1.09	4.81
Triad	0.94	2.76

Base year: 1991.
Source: AMECO (DG II).

Table 6 also shows major differentials in job creation and in physical capital accumulation within the EU. For instance, Spain, Ireland, Luxembourg and The Netherlands created employment at rates similar or even higher than the USA or Japan, and Portugal almost doubled the EU average. However, although higher than in the USA,[2] accumulation of physical capital was lower in all the Member States than in Japan, although it exceeded 3% in Spain, Luxembourg and Portugal. Apart from TFP growth, it is capital accumulation (2.4% per year) which mainly explains the observed growth in Germany during the period, since employment creation was slightly below the EU average.

Productivity and living standards

The joint evolution of growth and employment determines labour productivity growth, which, in turn, is the main

[1] See Krugman (1996).

[2] Except for Denmark.

Table 7

Productivity and living standards in the triad, 1985-95

	Productivity growth	Participation rate 1995	GDP per capita growth
B	1.89	36.4	1.87
DK	1.47	49.9	1.49
D	2.39	42.7	2.07
EL	0.90	36.5	1.01
E	1.81	31.3	2.71
F	1.65	38.8	1.64
IRL	3.41	34.5	4.65
I	2.66	34.7	1.94
L	0.60	52.5	2.40
NL	0.79	43.6	1.86
P	2.40	44.9	3.17
UK	1.91	43.7	1.95
EU	2.01	39.4	2.01
USA	0.97	48.1	1.51
J	1.81	51.7	2.52
Triad	1.58	44.6	1.91

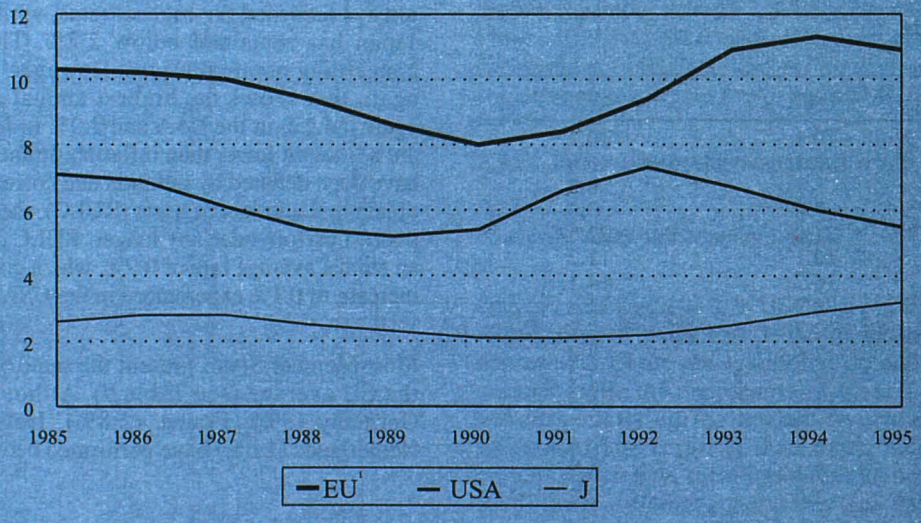
Base year: 1991.
Source: AMECO (DG II).

explanatory factor of the standard of living of a country. Living standards are usually measured by the GDP per capita, and the GDP is measured in purchasing power parities to allow for international comparisons. The GDP per capita in the EU grew at a rate of 2% per year in constant prices, representing around 70% of the US GDP per capita in the 1990s. However, living standards in Japan grew by 2.5% per year and caught up with the European GDP per capita in the early 1980s and still continued to rise reaching the level of around 80% of the American living standard.[1]

The first column in Table 7 shows apparent labour productivity growth rates in the triad. The EU has recorded the highest rate, immediately followed by Japan. However, in terms of improvement of living standards, the EU is in a middle position between the USA and Japan (see last column of Table 7). The reason is that GDP per capita can be expressed as the product of the level in productivity and the employment to total population ratio. Therefore, the rate of growth in living standards is equal to the productivity growth rate plus the change in this ratio. The share of employment on total population has remained on average quite stable in the EU between 1985 and 1995 at around 40%, whilst it has been growing in the USA (from 45% in 1985 to 48% in 1995) and in

[1] See the Competitiveness Report.

Figure 5: **Unemployment in the triad in % of total labour force**



[1] From 1991: including former East Germany.
Source: AMECO (DGII).

Japan (from 48% in 1985 to 52% in 1995). In other words, concerning the EU as a whole, although it has performed relatively well in terms of growth and productivity, living standards have not increased in the same proportion because the share of employment in total population in the EU is relatively low.

As far as growth rates in per capita GDP are concerned, countries like Spain (2.7%), Portugal (3.2%) and, especially, Ireland (4.65 %), are the Member States which are recording the highest rates. It is also worth noting that, as a general rule, countries experiencing high growth rates in living standards, have also recorded high growth rates in employment. Apart from these countries, only Germany and Luxembourg recorded higher improvement in living standards than the EU average, although in Belgium, France, Italy, The Netherlands and the UK per capita GDP grew more than in the USA.

Unemployment

Such a relatively poor performance of the EU in creating jobs has its counterpart in unemployment figures. Graph 5 shows the evolution of unemployment rates in the triad between 1985 and 1995. Whilst unemployment fell in Japan from 2.6 in 1985 up to 2.1 in 1991 and then increased by 1 percentage point to represent 3.2% of the active population in 1995, in the EU the lowest rate registered (1990) still amounted to 8% and increased by almost three points in five years. This structural trend of unemployment in the EU contrasts with a rather cyclical evolution in the USA, where the unemployment rate accounted for 5.5% of the active population in 1995.

The evolution of unemployment observed in the EU can be applied directly to the 12 Member States (see Table 8). Only Luxembourg, which registers the lowest unemployment rate in the triad, and Denmark, where unemployment is close to the USA's, are the exceptions to this rule. Even certain European countries, such as Spain or Ireland, which have performed quite well in terms of growth and employment growth, present a sombre panorama as far as unemployment is concerned. These two countries record the highest unemployment rates within the EU 22.5% and 14.1% of the active population are respectively unemployed in Spain and Ireland. Looking at the evolution of the participation rate[1] it seems quite clear that in those countries there is a problem in absorbing an exogenous growing labour supply, which is mainly explained by sociological, structural[2] factors. In other Member States, such as Belgium (10.1%), France (11.2%) or Italy (11.8%) unemployment rates are above 10%, and in Germany or the UK the rate is 3 percentage point higher than in the USA.

Table 8

Unemployment rate

	1985	1995
B	10.1	10.1
DK	7.1	6.6
D[1]	7.1	8.5
EL	7.0	9.0
E	21.0	22.5
F	10.1	11.2
IRL	16.7	14.1
I	8.3	11.8
L	2.7	2.2
NL	7.6	7.3
P	8.7	7.2
UK	11.3	8.9
EU[1]	10.3	10.9
USA	7.1	5.5
J	2.6	3.2
Triad	7.7	7.4

[1] 1995: including former East Germany.
Source: AMECO (DG II).

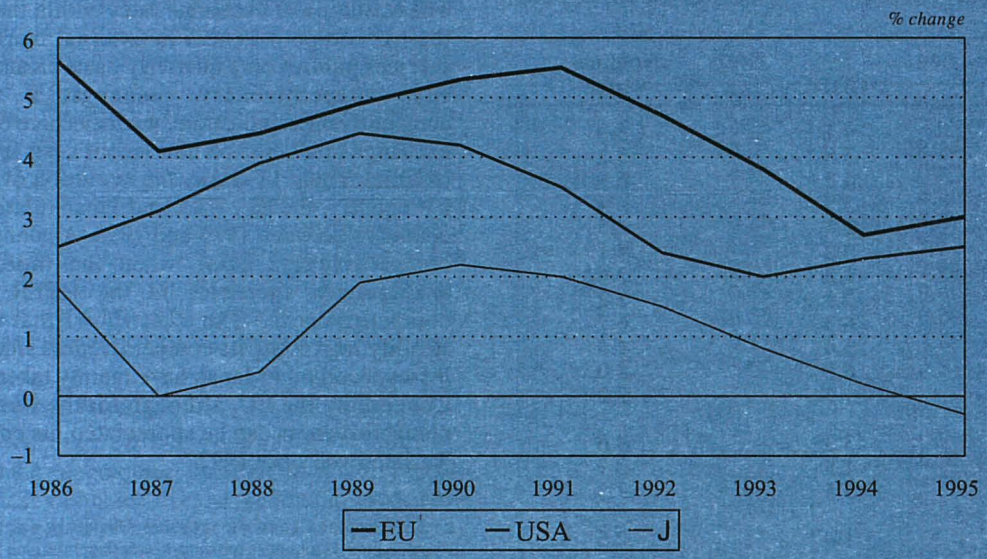
2.3.4. Inflation, wages and real unit labour costs

The EU has recorded the highest inflation rate in the triad over the decade. Inflation, measured by means of the annual average growth rate of the GDP deflator in national currency, amounted to 4.4% in the EU, compared with 3.1% in the USA and 1% in Japan. Such averages are quite representative of the evolution between 1985 and 1995. Although, as shown in Graph 6, inflation rates have a strong cyclical component, the EU has always recorded the highest rates, whilst annual inflation in Japan has remained below 2.2%. The same can be said concerning nominal wages. However, although it is the EU again that shows the highest annual average rates (5.5%, against 4.1% in the USA and 2.9% in Japan), the differences are a little bit lower than inflation. In fact, once average wages have been deflated by inflation and corrected by productivity to obtain real unit labour costs (RULC), the EU does not show the poorest performance any longer. RULC decreased in the EU by an annual average rate of 0.9%, which contrasts with the annual increase of 0.1% experienced in the USA and Japan.

Most Member States present the same basic characteristics as the EU average (see Table 9). Although Denmark (2.9%), Germany (3%), France (2.8%), Ireland (2.6%) and The Netherlands (1.6%) have performed better than the USA, their

[1] The difference between the per capita GDP growth rate and the productivity growth rate gives the change in the participation rate.
[2] It is worth remarking that Spain and Ireland show employment growth rates comparable to the USA and Japan.

Figure 6: **GDP deflator in national currency**



[1] PPS weighted from 1991: including former East Germany.
Source: AMECO (DG II).

Table 9

Inflation, wages and unit labour costs rates (in national currencies) within the triad, 1985-95

	GDP	Nominal wages	RULC
B	3.1	4.3	–0.5
DK	2.9	4.2	–0.5
D[1]	3.0	4.5	–0.7
EL	15.1	14.7	–1.0
E	6.4	6.9	–1.0
F	2.8	3.6	–1.0
IRL	2.6	4.9	–1.1
I	6.0	7.0	–1.2
L	4.7	5.1	–0.2
NL	1.6	2.6	–0.1
P	11.2	12.5	–1.5
UK	4.6	6.6	0.0
EU[1]	4.4	5.5	–0.9
USA	3.1	4.1	0.1
J	1.0	2.9	0.1
Triad	3.3	4.5	–0.3

Base year: 1991.
[1] From 1991: including former East Germany.
Source: AMECO (DG II).

inflation rates are still higher than in Japan. On the other hand, certain Member States like Greece (15.1%), Spain (6.4%), Italy (6.0%) and Portugal (11.2%) have recorded rather high inflation rates. The same applies to the evolution of average nominal wages, although now the number of countries performing better than the USA is more reduced, just including France and The Netherlands. However, once wages have been corrected by inflation and productivity, all the European countries shows negative rates for RULC.

2.3.5. Price-competitiveness and trade

Exchange rates and competitiveness

One ecu was worth of 0.76 US dollars in 1985. Ten years later, Americans had to pay 1.31 dollars to obtain one ecu. This sharp appreciation of the ecu against the US dollar by around (72%) contrasts with the depreciation with respect to the Japanese yen, especially during the last five years of the period of reference. The result is that, when measured in ecu as a common currency, inflation rates and nominal wages in the triad lead to different conclusions (see Table 10) with the EU occupying an intermediate position between Japan (5.5% and 7.5% per year respectively for the GDP deflator and nominal wages measured in ecu) and the USA, where the GDP deflator and nominal wages in ecu respectively fell by 1.8% and 0.9%

Table 10

Inflation and wage rates (in ecu) within the triad, 1985-95

	GDP	Nominal wages
B	4.7	5.9
DK	3.8	5.2
D[1]	4.8	6.3
EL	3.7	3.4
E	4.1	4.5
F	3.2	4.1
IRL	1.3	3.6
I	2.1	3.2
L	6.3	6.7
NL	3.4	4.5
P	6.8	8.0
UK	1.3	3.2
EU[1]	3.3	4.6
USA	-1.8	-0.9
J	5.5	7.5
Triad	1.4	2.6

Base year: 1991.
[1] From 1991: including former East Germany.
Source: AMECO (DG II).

and nominal wages in ecu respectively fell by 1.8% and 0.9% per year.

The evolution of exchange rates within the triad has affected the EU competitiveness in external markets. Commission services publish on a quarterly basis an analysis on price and cost competitiveness.[1] Amongst a wide sample of competitiveness indicators, we focus here on the real effective exchange rate based on unit labour costs in the total economy (REER). Table 11 shows the evolution of the REER of each EU country, the EU, USA and Japan relative to 23 industrial countries between 1985 and 1995. A country is experiencing competitiveness gains when the index decreases and, analogously, increases in the REER mean a loss of competitiveness.[2] The table shows that the USA has been steadily improving its competitiveness since 1985, whilst the losses recorded in Japan have mainly taken place since 1991. Concerning the EU, although for the whole period a fall in competitiveness can be appreciated, its competitive position has improved since 1992.

[1] See European Commission (1996a). Obviously, diagnoses on the evolution of price-competitiveness indicators vary depending on the base year used in the analysis. Although most analyses start in 1987 (Louvre agreement), here 1985 has been chosen a the base year for a sake of uniformity in the presentation of chapter.
[2] See European Commission (1996a) for the technical details.

Table 11

Real effective exchange rate base on ULCE

Annual figures (index 1987 = 100) relative to 23 industrial countries (IC23)

	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995
BLEU	91.4	97.9	100	95.8	93.6	98.5	99.2	101.6	104.0	108.0	112.0
DK	84.9	91.2	100	98.1	94.3	97.7	92.8	94.7	95.5	94.2	98.9
D	84.8	94.2	100	96.6	92.0	93.0	90.1	94.6	98.7	98.2	104.1
EL	118.3	101.9	100	104.9	110.7	115.3	104.5	103.5	103.5	109.6	114.3
E	92.9	97.2	100	105.9	111.6	119.7	121.8	123.6	110.2	103.6	105.7
F	95.8	100.4	100	95.6	91.6	94.9	91.4	93.0	95.7	96.0	99.4
IRL	96.0	103.8	100	97.7	93.1	94.0	89.4	92.1	87.7	87.2	85.7
I	89.4	96.3	100	99.7	102.1	109.7	111.2	108.3	90.3	86.2	78.3
NL	90.5	96.4	100	97.2	91.0	91.1	89.3	91.4	94.9	96.2	99.0
P	97.0	99.9	100	100.9	104.1	112.0	124.0	131.6	130.4	129.5	133.2
UK	105.8	99.3	100	109.8	112.3	116.5	120.6	116.6	106.1	106.1	100.4
EU	79.7	91.9	100	98.0	93.0	104.4	100.4	104.5	92.3	90.7	94.4
USA	129.5	110.7	100	95	97.3	92	90	87.4	90.1	91	89.3
J	74	95	100	105.7	98.9	86.9	92.5	95.6	114.6	124.2	129.7

Source: Price and cost competitiveness (DG II).

Most European countries have experienced more or less significant cost-competitiveness losses. Only Ireland and Italy are clear exceptions to this rule, whilst Greece and the UK have recorded marginal competitiveness gains in 1995 with relation to 1985. However, the direct comparison of the two years conceals important differences concerning the evolution of the REER. There is a group of Member States, which mainly includes Belgium, Denmark, Germany, France and The Netherlands, whose competitiveness improved until 1991 and then fell until 1995. On the contrary, other countries, such as Spain, Italy or the UK recorded competitiveness losses during the first subperiod and then recovered totally or partially their competitive positions between 1991 and 1995. Portugal has been steadily losing competitiveness over the whole period, whilst Ireland has followed the opposite path. Finally, competitiveness has experienced minor changes in Greece.

Total trade in goods and services

Table 12 provides the geographical distribution of total exports of goods and services within the EU and the triad in 1985, 1990 and 1995. Figures for the EU countries, as well as for the EU as a whole (second block of the table), include both intra and extra-EU exports.[1]

There are no clear trends concerning the distribution of total exports within the triad. Nevertheless two periods can be considered. In the first half of the period the EU gained market share at the expense of both the USA and Japan, whilst the opposite path is observed between 1990 and 1995.[2] It is worth noting that as long as shares have been calculated inclusive of intra-EU exports, such an evolution may reflect two effects: the well-known increase in intra-EU trade that took place during the 1980s, and the purely statistical effect of the changes in the reporting system in 1993 (Intrastat), which underestimates intra-EU trade flows.[3] In fact, trade within the triad net of intra-EU trade shows a different picture.[4] The USA's share steadily grew, whilst the EU's share fell and Japan's remained more or less stable over the whole period.

Total imports of goods and services (see Table 13) show a rather similar evolution, although the changes observed between 1985 and 1990 are sharper than for exports. Since intra-EU exports should equal to intra-EU imports, such changes are also partially due to the strong increase in intra-EU

[1] As we shall see later, statistics on intra and extra-EU trade of goods and services are only available up to 1993.
[2] Such developments are reflecting, of course, the impact of the evolution of exchange rates.
[3] See Box 1.
[4] Extra-EU trade of goods and services can be found in the statistics on balance of payments between 1986 and 1993.

Table 12

Total exports of goods and services within the triad

	1985	1990	1995[1]
B	7.95	8.31	8.92
DK	2.75	2.69	2.60
D	26.08	28.24	24.85
EL	0.85	0.82	0.84
E	4.86	4.92	5.95
F	16.20	15.79	16.15
IRL	1.47	1.56	2.09
I	12.05	12.94	13.41
L	0.53	0.60	0.70
NL	10.09	9.00	9.30
P	0.11	1.29	1.38
UK	17.06	13.95	13.81
EU	100	100	100
EU	61.28	66.37	63.53
USA	23.32	21.28	22.44
J	15.40	12.34	14.03
Triad	100	100	100

[1] Including former East Germany.
Source: AMECO (DG II).

Table 13

Total imports of goods and services within the triad

	1985	1990	1995[1]
B	7.97	8.27	8.75
DK	2.83	2.36	2.43
D	24.13	23.91	25.24
EL	1.50	1.41	1.46
E	4.61	6.10	6.27
F	16.33	16.37	15.44
IRL	1.47	1.46	1.80
I	12.77	13.27	12.09
L	0.52	0.61	0.66
NL	9.64	8.52	8.80
P	1.13	1.66	1.87
UK	17.10	16.07	15.19
EU	100	100	100
EU	56.96	64.11	61.37
USA	31.66	24.37	26.43
J	11.38	11.52	12.20
Triad	100	100	100

[1] Including former East Germany.
Source: AMECO (DG II).

trade during the 1980s and to the introduction of Intrastat. However, if only extra-EU imports are considered, one simultaneously observes a sharp increase in EU and Japanese shares up to 1990, then a significant fall in the share of EU exports followed by a more or less equivalent increase in the share of the USA.

The main feature of the evolving relative weight of most Member States in total EU trade is that shares within the EU are much more stable than shares within the triad. This is a clear consequence of lower cyclical differences within the EU. The main exceptions are Germany, Ireland, Spain and Portugal where the effects of structural factors, such as economic integration and reunification, seem very apparent. Portugal increased its share of both exports and imports, whilst the weights of Ireland and Spain in EU imports have remained relatively stable. It is worth noting that such movements coincide with the impact of German reunification on trade shares. German shares show, as expected, that reunification decreased German exports, and increased imports, relative to the EU average. For Spain, Portugal and Ireland, once the effect of the reunification is taken out, it is clear that accession and the SMP have resulted in a higher increase of imports relative to exports.[1]

Intra-EU trade

As far as the effect of the SMP on trade is concerned, one of the most interesting questions is the extent to which the SMP has increased trade within the EU. This will be analysed in detail in Chapter 4, but what can be shown in this overview is the evolution of intra-EU trade of goods and services. Furthermore, the extent of regionalization due to the SMP can be measured by the share of intra-EU trade in total EU trade.

To focus on intra-EU trade one has to rely on alternative statistical sources such as the balance of payments, which are not directly comparable with the AMECO databank and only provide homogeneous data between 1986 and 1993 for all Member States. Tables 14 and 15 show that the evolution of intra-EU trade within the EU followed quite similar paths. Again, intra-EU shares are quite stable, except for Germany, Ireland, Spain and Portugal. In the last three countries, economic integration boosted both imports and exports, whilst in Germany reunification decreased intra-EU exports and increased intra-EU imports.

Table 16 provides some indicators of the degree of regionalization in the EU during the SMP. It shows the evolution of imports from (exports to) EU countries relative to total imports (exports). In order to avoid the statistical complications imposed by changes in the reporting system of intra-EU trade, the analysis focused on 1986-92.[2] The US share of exports to EU countries in total exports remained relatively stable, whilst Japan's significantly increased. However, the share of imports by EU countries in total imports has not

Table 14

Intra-EU exports of goods and services within the EU

	1986	1990	1993[1]
BLEU	10.7	10.7	10.7
DK	2.4	2.3	2.5
D	24.8	23.5	21.4
EL	1.0	0.9	0.9
E	5.2	5.8	6.3
F	16.4	17.1	17.4
IRL	1.9	1.9	2.3
I	12.3	12.9	12.5
NL	12.6	11.8	12.4
P	1.2	1.6	1.8
UK	11.6	11.5	11.7
EU	100	100	100

[1] Including former East Germany.
Source: Balance of payments.

Table 15

Intra-EU imports of goods and services within the EU

	1986	1990	1993[1]
BLEU	10.4	10.1	10.0
DK	3.0	2.2	2.3
D	22.3	21.5	22.5
EL	1.3	1.3	1.4
E	4.0	6.2	6.2
F	17.7	17.6	17.1
IRL	1.8	1.8	2.0
I	12.6	13.5	11.7
NL	10.7	9.5	10.3
P	1.2	1.9	2.5
UK	14.7	13.9	13.4
EU	100	100	100

[1] Including former East Germany.
Source: Balance of payments.

[1] The evolution of trade shares within the EU in the second half of the period may also be reflecting differences across Member States in biases indiced by Intrastat.

[2] As shown in Table 14 1993 is already available. However, data for this year are not comparable with the previous ones. The fact that the shares of both exports and imports fall in all the Member States reveals that the changes observed in 1993 are a purely statistical artefact.

Table 16

Intra-EU trade in goods and services as a % of total trade in goods and services

Export	1986	1990	1992	1993
B	70.1	72.7	73.0	71.2
DK	43.1	44.8	48.3	47.4
D[1]	48.9	51.4	52.6	48.7
EL	49.5	54.2	53.2	53.3
E	61.0	68.2	68.8	66.5
F	53.0	58.3	58.9	57.0
IRL	69.9	69.7	69.6	69.8
I	53.3	57.2	57.1	53.5
NL	72.0	74.4	73.9	71.4
P	64.8	70.0	71.8	73.8
UK	42.7	47.7	50.9	47.8
EU[1]	54.0	57.9	59.1	56.5
USA	24.4	26.0	25.4	23.7
J	14.9	18.8	18.4	15.8
Triad	42.1	46.3	46.3	42.9

Import	1986	1990	1992	1993
B	69.4	69.5	69.0	67.3
DK	51.6	48.7	48.3	49.8
D[1]	50.5	50.5	50.8	47.8
EL	56.4	57.7	60.2	59.8
E	51.4	58.8	60.0	58.8
F	58.6	59.0	58.1	57.4
IRL	70.1	69.4	69.0	69.1
I	56.9	58.2	56.6	55.1
NL	64.0	64.3	65.0	62.0
P	58.9	68.2	72.9	74.4
UK	51.3	50.8	51.2	48.7
EU[1]	56.3	57.0	56.9	55.1
USA	21.9	21.0	20.2	20.2
J	12.8	17.3	13.7	14.6
Triad	41.8	43.9	43.8	41.0

[1] From 1991: including former East Germany.
Source: Balance of payments.

changed within the triad. In other words, European countries have become more and more open as destination markets for triad exports, whilst the share of imports by the EU has evolved on average in the same way that total imports between 1985 and 1992.

Since, for the EU as a whole, intra-EU exports equal intra-EU imports, Table 16 indicates that European producers found it relatively more easy to increase their penetration of EU markets than external markets. Simultaneously, access to European markets is rather similar for European producers and third-country producers. In consequence, 1986-93 data could indicate that the SMP[1] has lead to net trade creation. Something rather similar can be observed in most Member States, except Spain and Portugal where trade with other EU countries grew much more than total trade.

2.3.6. The sectoral structure of European economies

This section attempts to give some indicators of the evolution of the sectoral structure of the triad economies between the 1980s and the 1990s. We consider the whole economy as made up of six broad sectors: agriculture, energy, manufacturing, construction, market services and non-market services. We analyse and compare the relative weights of these six sectors in the triad with a view to identifying the main structural changes taking place. Furthermore, since the SMP mainly affected manufacturing and market services we will be in a position to provide rough measures of the size of the single market and its evolution. Since the SMP does not affect all manufacturing and market services sectors, such measures can only provide an upper-bound of the size of the single market.

The sectoral structure of the economies in the triad

Tables 17 and 18 show the distribution of total employment, gross value added (GVA) and investment among the six sectors at the beginning and the end of period of reference.[2] Concerning GVA, compared with the USA, the only triad member for which homogeneous data exist, the EU showed a relatively low specialization in market services and energy at the beginning of the period, whilst the relative share of other sectors was higher in the EU than in the USA. On the other hand, Japan presented a relatively high specialization in manufacturing, and the share of market services was higher than in the EU. This relative distribution of GVA has not much changed during the period. However, we can appreciate a significant increase of the relative weight of market services in the EU, which reached the same level as in Japan, whilst the share of manufacturing fell by two percentage points (but remained quite stable in Japan).

[1] This is consistent with the main empirical findings concerning trade creation and trade diversion analysed in Chapter 4.

[2] The lack of complete data from 1992 prevents us from providing the actual changes taking place between 1985 and 1995. Tables 16 and 17 compare the average weight of each sector for the period 1983-85 with the average weight for the period 1990-92. Since we are carrying out structural comparisons, changes observed between these two periods may be good approximations to the actual changes which occurred between 1985 and 1995.

Table 17

Weight of sectors in total economy, 1983-85

Employment

	Agriculture	Energy	Manufacturing	Building	Market services	Non-MS
B	0.4	1.9	24.8	6.0	39.1	27.9
DK	2.2	0.8	22.1	6.1	32.6	36.2
D	1.0	2.1	33.6	7.7	33.7	21.9
EL	2.2	2.1	25.3	9.5	35.5	25.3
E	6.6	1.9	28.2	7.9	35.6	19.8
F	1.7	1.5	25.4	7.1	35.6	28.6
IRL	2.7	2.0	25.0	9.0	32.1	29.3
I	5.2	1.2	28.8	7.7	31.1	25.9
L	0.7	0.7	27.1	9.5	45.5	16.0
NL	1.8	1.6	20.9	7.3	49.1	19.3
P	5.1	1.3	31.5	12.2	27.3	22.5
UK	1.6	2.6	22.6	5.1	46.8	21.3
EU	2.5	1.9	27.3	7.1	37.2	23.9
USA	1.8	1.6	20.1	4.6	53.1	18.7
J	NA	NA	27.8	NA	47.6	NA
Triad	NA	NA	24.7	NA	45.3	NA

Value added

	Agriculture	Energy	Manufacturing	Building	Market services	Non-MS
B	2.5	3.1	22.7	5.6	48.8	15.4
DK	5.8	1.5	19.4	5.7	43.9	22.9
D	1.9	3.0	29.3	6.0	43.8	14.1
EL	17.3	3.3	18.6	6.5	37.7	15.6
E	6.3	2.8	25.4	7.0	43.5	11.9
F	4.2	3.1	21.9	5.8	45.5	17.9
IRL	10.9	3.5	31.3	6.9	36.0	18.3
I	4.8	2.7	24.7	6.6	46.2	12.9
L	2.2	1.3	25.4	4.9	54.1	11.3
NL	4.2	7.9	17.3	5.1	49.3	12.7
P	7.8	1.4	27.4	6.1	43.3	12.1
UK	1.7	7.7	23.7	5.8	42.1	15.7
EU	3.6	3.9	24.6	6.0	44.5	15.0
USA	2.3	5.9	22.4	4.3	54.1	11.3
J	NA	NA	28.6	NA	48.0	NA
Triad	NA	NA	24.2	NA	49.9	NA

Investment

	Agriculture	Energy	Manufacturing	Building	Market services	Non-MS
B	2.5	7.0	19.8	1.5	52.9	16.2
DK	6.5	9.3	14.2	3.3	54.2	12.5
D	2.8	7.0	17.7	1.3	58.6	12.6
EL	5.9	12.6	13.8	NA	46.1	21.5
E	4.0	14.4	10.1	0.9	51.8	12.4
F	3.6	7.2	14.0	2.7	58.5	14.0
IRL	8.8	8.8	18.9	2.7	53.4	7.5
I	6.7	5.1	17.4	2.9	57.8	10.1
L	4.4	3.2	22.1	1.9	44.5	23.9
NL	5.0	6.1	16.2	1.7	58.6	13.9
P	3.9	8.7	22.3	3.2	49.3	12.6
UK	2.1	11.9	13.0	1.1	62.3	9.9
EUR 10[1]	3.9	7.5	16.0	2.0	58.6	12.1
USA	2.0	5.4	17.8	0.8	58.6	15.4
J	6.1	8.2	20.1	2.5	44.4	18.5
Triad	3.5	6.7	17.8	1.5	55.3	15.2

[1] Excluding: EL, E.
Source: BDS.

Table 18

Weight of sectors in total economy, 1990-92

Employment

	Agriculture	Energy	Manufacturing	Building	Market services	Non-MS
B	0.4	1.1	22.6	6.5	42.8	26.6
DK	2.0	0.8	21.6	6.0	34.0	35.6
D	0.9	1.7	32.4	6.8	36.6	21.7
EL	1.6	2.3	23.5	7.6	36.1	29.1
E	4.3	1.4	24.8	9.9	33.8	25.7
F	1.4	1.2	21.9	6.8	39.5	29.3
IRL	2.7	1.7	24.7	7.3	32.6	30.4
I	4.5	1.2	26.2	7.0	34.3	26.8
L	1.1	0.6	20.4	10.5	52.4	15.0
NL	1.7	1.3	19.6	7.4	53.8	16.3
P	5.4	1.3	32.2	7.8	27.9	25.4
UK	1.3	1.6	18.6	4.8	50.7	23.1
EU	2.1	1.4	24.9	6.8	40.0	24.9
USA	1.7	1.2	16.9	4.5	57.3	18.4
J	0.2	0.1	26.5	1.0	51.8	20.5
Triad	1.6	1.1	22.1	4.7	49.1	21.5

Value added

	Agriculture	Energy	Manufacturing	Building	Market services	Non-MS
B	1.9	4.2	20.9	5.7	53.9	13.4
DK	4.1	2.9	18.5	5.5	46.5	22.6
D	1.3	3.9	28.6	5.5	47.4	13.2
EL	15.3	4.2	15.8	7.0	40.7	17.1
E	4.3	6.0	20.8	9.6	44.9	14.5
F	3.2	4.1	20.4	5.4	50.3	16.6
IRL	7.9	2.7	30.3	5.3	41.3	15.8
I	3.3	5.5	21.6	5.9	49.7	14.0
L	1.6	1.5	23.8	7.3	51.5	14.3
NL	4.1	6.5	18.0	5.4	55.0	11.0
P	5.4	3.9	25.2	5.2	44.9	15.5
UK	1.5	5.9	21.1	6.2	49.8	15.6
EU	2.8	4.8	22.8	6.0	49.0	14.7
USA	2.2	3.9	18.9	4.1	57.8	13.1
J	2.2	3.3	27.6	9.5	49.5	7.8
Triad	2.4	4.1	22.4	6.1	52.4	12.5

Investment

	Agriculture	Energy	Manufacturing	Building	Market services	Non-MS
B	1.6	4.6	26.4	2.1	58.0	7.2
DK	5.4	7.7	15.5	2.7	57.5	11.5
D	2.2	4.7	19.5	1.6	60.7	11.4
EL	3.4	6.4	17.9	NA	NA	15.6
E	NA	NA	NA	NA	NA	NA
F	2.7	4.1	15.8	2.3	59.9	15.3
IRL	10.7	4.2	18.5	2.2	58.4	6.1
I	5.4	5.3	18.1	2.5	59.2	9.4
L	2.4	2.6	14.7	2.0	59.8	18.5
NL	4.8	4.9	14.1	1.7	62.8	11.8
P	4.5	0.8	21.1	5.5	49.9	11.0
UK	1.2	10.7	12.6	0.7	63.3	11.6
EUR 10[1]	3.1	5.6	17.2	1.9	60.4	11.7
USA	2.0	5.4	15.9	0.7	55.1	20.8
J	NA	NA	NA	NA	NA	NA
Triad	NA	NA	NA	NA	NA	NA

[1] Excluding: EL, E.
Source: BDS.

Similar features are found in the sectoral distribution of labour. However, by comparing sectoral shares in GVA and in labour, it becomes apparent that market services are less labour-intensive[1] in the EU than in the USA and Japan.[2] As expected, such low labour intensity in EU market services in the EU is accompanied by the highest capital intensity in the triad. During the reference period EU market services showed a relative investment to GVA ratio higher than in the USA or Japan.

When looking at the Member States we can observe similar trends towards a higher weight of market services. Nevertheless, Tables 17 and 18 show a great degree of heterogeneity within the EU. Whilst in certain countries, like the UK, The Netherlands, Belgium, France or Luxembourg, the sectoral distribution is comparable to the one observed in the USA or Japan, other Member States, like Ireland, Spain, Portugal or Greece, present a share of market services, far from the EU average. Differences between European countries and the USA and Japan are even more evident regarding the distribution of employment. In all Member States the share of market services in employment is lower than in the USA, although in the UK, The Netherlands and Luxembourg it is higher than in Japan. Furthermore in almost all European countries the share of non-market[3] services is higher than in the USA or Japan. Another common feature concerning market services in EU countries is that their share of investment is higher than their share in GVA and that, as long as investment is an indicator of capital intensity, market services in Member States are on average more capital intensive[4] than in the other two triad members, which is clearly linked to relatively higher labour costs and apparent labour productivity in EU market services within the triad.[5]

On the size of the single market

Although the SMP spreads its effects directly or indirectly over the whole economy, manufacturing and market services are the two sectors most directly concerned. To simplify the analysis we focus in this chapter on the share of these two sectors in terms of GVA. The joint share of manufacturing and market services in the EU GDP recorded the highest growth in the triad during implementation of the SMP. At the beginning of the period, manufacturing and market services represented around 69% of EU GDP (76.5% in the USA and 76.6% in Japan). In the last years available, the share jumped to almost 72% in EU, but remained relatively stable in the USA (77%) and Japan (77%). However, although the relative growth of these two sectors in EU GDP is evident, it is difficult at this stage to link it with the SMP, since the EU showed the lowest share at the beginning of the period. Therefore, apart from the SMP, other structural factors may explain this relative evolution.

As expected, structural changes taking place in the Member States are rather heterogeneous and do not show clear links with the SMP. Although many countries, such as Belgium, Germany, France, The Netherlands and the UK, followed the same path as the EU average, in Greece, Italy and Portugal the joint shares of manufacturing and market services remained quite stable. However, shares in Luxembourg (which were especially high in 1985) and Spain decreased. In both cases, such a fall is coincidental with an almost equivalent increase in non-market services.

[1] A rough measure of relative labour intensity is obtained by means of the ratio between the employment and the GVA shares.
[2] See Buigues et al. (1993).
[3] Which includes a number of services provided by the public sector.
[4] And lower labour-intensity.
[5] See also Buigues et al. (1993).

Box 1: Statistical problems with trade series since 1 January 1993

An accurate assessment of changes in international trade from 1993 on is difficult because of a new reporting system (Intrastat) which was introduced at the beginning of 1993 in connection with the start of the single market. According to the new system, cross-border transactions within the EU are no longer recorded by customs offices but instead reported directly by companies to statistical offices. (Trade with countries outside the EU continues to be recorded by customs). Only transactions exceeding a certain minimum value, which can vary from country to country, need to be reported. There have been many teething problems with the new system which have led to unusually long delays in the publication of the trade statistics and to perceived biases in the measured trade flows. In general, the volume of trade appears to have been underestimated.

The nature of the bias appears to differ between intra- and extra-EU trade flows. The former seem to be systematically biased downwards, but the extent of the bias probably varies across Member States. Extra-EU flows are affected differently. Here the main problem seems to be with Belgium and the Netherlands, on the one hand, and with France and Germany on the other. Due to the transit activity of the ports of Antwerp and Rotterdam, trade statistics overestimate the actual exports (imports) originating in (destined for) the former and underestimate those of the latter since 1993.

Thus the international trade data of EU Member States are probably surrounded with a relatively large margin of uncertainty. In any case, the introduction of Intrastat has affected the comparability of the data for EU countries in 1993 with those of previous years.

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Chapter 3 — Methodology for an evaluation of the internal market programme

Contents

Chapter 3

Methodology for an evaluation of the internal market programme

3.1. Introduction

Assessing the economic impact of a wide-ranging economic policy such as the single market programme poses a challenging methodological problem for economic analysis. The difficulty of the task was recognized at the time of the Cecchini report, which already carried out an *ex ante* evaluation of the potential effects of the SMP. As argued below, the *ex post* analysis faces even more difficult methodological questions.

Assessing the SMP encountered two principal problems. The first related to the microeconomic nature of the SMP and to the fact that it affects the decisions of a large number of individual firms and consumers throughout the entire European economy. The second problem referred to the type and number of regulatory measures covered by the SMP, which runs the whole range from the elimination of border controls to the harmonization of standards in certain industries.

The *ex ante* Cecchini exercise tackled these problems by using a variety of methods based on state-of-the-art economic analysis of the time. 'The Economics of 1992' (*European Economy*, No 35, March 1988) constituted essentially an *ex ante* 'comparative statics' assessment of the policy change, based on a number of model-based techniques, complemented with conventional survey and case study analyses. The general approach and the methods that were used are briefly reviewed in section 2.

The qualitative and quantitative economic evaluation presented in this volume raises methodological challenges that very often go beyond those experienced in the preparation of the 1988 report. Section 3 briefly discusses how the present evaluation expands the general approach used in the earlier report by incorporating recent contributions to economic analysis. It also outlines the new methods that have been used in the background reports for this volume.

3.2. The economics of 1992

The general objective of the *ex ante* study on 'The economics of 1992' was to get a deeper understanding of the channels through which the removal of market barriers may result in economic gains and to quantify these potential gains.

The analysis in the 1988 report focused almost entirely on static allocation effects, adding to classical analysis on comparative advantage an innovative approach that highlighted economies of scale and imperfect competition. The removal of barriers implied by the SMP was expected to produce an improved allocation of resources through the fuller exploitation of comparative advantage and specialization. In addition, in many sectors of the European economy the SMP was expected to improve efficiency via rationalization of production associated with a fuller exploitation of scale economies. Great emphasis was laid on efficiency gains from economies of scale at the plant or firm level associated with the size of the EU market. However, as economies of scale inevitably lead to concentration in production, the report also emphasized the potential impact of the SMP on competition. It indicated that the removal of barriers was likely to produce strong 'pro-competitive' effects, while also emphasizing the need for a strong Community competition policy. Provided greater competition was obtained, the lower production costs associated with the efficiency gains from the SMP were to translate into lower consumption prices.

Clearly, the potential efficiency gains from the SMP required the reallocation of resources within the EU: reallocation within and across firms, reallocation within and across sectors, and reallocation within and across regions or even Member States. Such reallocation would imply more or less adjustment costs depending on its nature and on the functioning of labour and capital markets. Thus, in the short term the SMP was likely to create unemployment. As the report indicated: 'Let there be no mistake, the [SMP] is a medium-term therapy; it will take time for its benefits to become apparent, and patience and political determination will be required if we are not to change course'.

The *ex ante* study distinguished between three categories of impact. First, the direct and short-run effects of removing barriers, which were expected to affect principally the price of traded goods and to be relatively small. Second, the indirect effects on efficiency and costs, which were to result from enhanced competition and were to effect cost and efficiency. They were supposed to be higher than the direct and short-term effect. Finally, the medium to long-term effects and the dynamic impact, which were to result from the positive impact of increased competition and market size on innovation and technological progress. These were dubbed as 'dynamic effects' because they effect the long-term potential growth rate of the economy. They were potentially the most important effects, since, although they were to emerge only gradually, they provided cumulative economic gains.

The importance of the short-term effects were judged to depend in part on the speed of adjustment. As the authors of the Cechinni report indicated, 'it takes several years, however, to move to this new situation (the new equilibrium involving a once-and-for-all increase in the level of economic welfare) and

the time path may in reality be influenced by cyclical macro-economic conditions'.

Moreover, in the short term, the static effects dominate, whereas in the medium to long term, the importance of the dynamic effects will increase, although there is inevitably greater uncertainty about the size of these longer-term impacts. The *ex ante* study therefore concluded that 'the benefits of the internal market programme are likely to be progressively bigger as the time horizon for the analysis is extended.... However, the technical difficulty of the analysis and the margin of error surrounding quantitative estimates also increase.... If the analyses were stopped at the most easily observable (direct, short term) effects, it would give a serious understatement of the programme's likely effects'.

The *ex ante* report was based on five evaluation methods. The first was a business survey in which enterprises were requested to give their opinion about the costs of the various barriers impeding their activity.

The second approach involved microeconomic case studies of the cost of barriers in different industries.

The third method was based on partial-equilibrium models that tried to estimate the impact of the SMP on economic welfare, distinguishing between consumers, producers and government. These models used inputs from the microeconomic studies to provide a more complete overview of the impact. The results of the partial equilibrium exercises were aggregated to provide an approximation of the total aggregate or macroeconomic impact.

A fourth method involved macroeconomic models. The microeconomic methods gave a description of the potential final equilibrium for many markets in the economy, but this had to be complemented with macroeconomic models which could capture the interaction between the changes introduced by the SMP and the evolution of macroeconomic variables and macroeconomic policies. Using this approach, the economic consequences of the SMP (GDP, consumer prices, employment, public deficit, external balance) were presented according to different scenarios depending on the accompanying economic policy measures.

A final methodology referred to the dynamic effects of the SMP. The partial equilibrium microeconomic studies and the macroeconomic models focused on 'comparative statics' analysis, ignoring the dynamic effects of the SMP in terms of enhanced technological progress and innovation. The report attempted to provide some crude estimates of these effects.

3.3. The *ex post* economic evaluation

The *ex post* evaluation of the SMP undertaken in this report poses new methodological problems which were not present at the time of the *ex ante* evaluation.

The basic methodological challenge of an *ex post* evaluation involves isolating the effects of the SMP from many other economic disturbances and policy shocks — such as the economic cycle or German unification — that effected the European economy in recent years. The systemic and multifaceted nature of the SMP mentioned above make it extremely difficult to control properly for factors other than those under evaluation.

A second problem of the present *ex post* evaluation is that it cannot be fully an *ex post* analysis of the SMP because of the very short time that has elapsed since the completion of the programme. The very nature of the 1992 programme, and its gradual implementation, imply that its effects will only be fully observed throughout the economy a few years after the programme is completed. Events up to 1996 cannot incorporate the full impact of the programme, and, as a consequence, any assessment at this point in time has to be considered as partial and preliminary. This is all the more the case in view of the fact available statistics only permit analysis up to 1994.

Finally, almost 10 years have elapsed since the launching of the SMP. Over this period, the understanding of the implications of economic integration has been significantly improved due to new theoretical insights and empirical evidence obtained by researchers world-wide. This report is based upon the general framework put forward in 'The Economics of 1992', but incorporates new perspectives from economic theory and relies, where appropriate, on recent empirical evidence produced elsewhere. The new theoretical contributions are briefly reviewed next.

According to the most recent economic thinking, the SMP can be expected to produce three types of economic effects: allocation effects, accumulation effects and location effects. The first consists of the impact of integration on the static, short run allocation of resources, i.e. on economic efficiency. As argued above, this was the main focus of the Cechinni report. The second effect encompasses the impact on the accumulation of productive factors and covers both medium and long-run growth effects. The third effect refers to the geographical allocation of resources across Member States and/or regions of the EU. Both accumulation and location effects have been analysed in this report.

The accumulation and location effects are likely to require a longer time span to materialize than the allocation effects. The SMP should boost accumulation, and thereby contribute to

higher growth rates in the EU, in two manners. On one hand, the static, efficiency gains of the SMP translate into higher incomes, which may generate higher investment and raise growth in the medium term. On the other, the SMP could improve the benefits and reduce the costs of producing new innovations in the EU, which would boost growth in the long run. The SMP is also likely to affect the geographical distribution of production within the EU. The economic literature has noted that the degree of specialization in Europe is far below what is observed in the United States. Some ascribe this situation to the existence of trade barriers in Europe and predict, therefore, that the SMP could increase geographical specialization in the EU.

Related to the issues of growth and location is the question of the impact of the SMP on real convergence between the Member States and the regions of the EU. The expected effect of the SMP on convergence is ambiguous. On one hand, the SMP should favour convergence of per capita income levels across Member States via greater mobility of goods, services, capital and labour. On the other, increased geographical specialization could lead to increased polarization between richer and poorer countries or regions. Obviously, the purpose of the enhanced Community regional policy is to tilt the balance in favour of the former outcome.

With regard to the conventional allocation effects, this report incorporates some new perspectives on the impact of integration on trade flows. Recent developments in the economic literature suggest that the traditional division between intra- and inter-industry trade is insufficient. It is useful, for classifying trade flows, to distinguish products on the basis of price and quality, i.e. to recognize the existence of vertical differentiation. This approach has several advantages: it offers a useful empirical approximation of observed intra-industry trade flows at the product level, it can explain the specialization of countries along different price-quality ranges and it has important implications in terms of the adjustment costs resulting from changing patterns of trade.

The analysis of the impact of economic integration on the efficiency of firms and the extent of competition has also made substantive progress over recent years. Economists understand better today that supply-side economic policies such as the SMP prompt strategic reactions by market participants, in particular large firms and governments. The SMP changes the rules of the game in many markets, promoting new entry and competition in some, triggering exit and restructuring in others. Faced with such a structural change, firms and governments do not remain passive. Instead, they react to the new environment. Therefore, changes in the structure of markets in the final equilibrium, and the extent to which efficiency gains are achieved and passed on to consumers, is the result of a complex strategic game. Recent advances in economic analysis also show that the final outcome depends to a large extent on the extent to which firms invest in intangible assets and on the evolution of EU policies which complement the SMP, such as competition and trade policy.

As for methods, the current report relies on a broad set of studies which for the most follow the methodologies used for the *ex ante* analysis. The main innovation has been the use of computable general equilibrium (CGE) models. The main advantage of CGE models is that they are based on clear microeconomic foundations. This means that these models trace the effects of policy changes on the whole economy in a consistent fashion. That is, taking into account the constraint imposed by the availability of factors of production on the sectoral allocation of resources.

Finally, the *ex post* assessment benefits from the availability of observed data for the period under investigation, and this means that the box of tools of the analyst has included on this occasion a wider use of econometric and statistical techniques. Nevertheless, for the reasons presented above, the tentative nature of the exercise remains. In the *ex ante* exercise, the question asked was a hypothetical one: What are the potential gains associated with implementing the SMP? In the present *ex post* analysis, the question is: What have been the gains afforded by the implementation of the SMP?

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Chapter 4

Trade and FDI specialization effects of the single market programme

4.1. Introduction

This chapter analyses the extent to which the single market programme (SMP) has changed the specialization of the Member States, in terms of both trade and FDI. Trade expansion is held to be welfare-increasing because less efficient domestic production is replaced by imports produced more efficiently. The SMP, by removing trade barriers between countries, was expected to expand trade among EU Member States and thereby improve welfare. There was clearly a possibility that increased trade amongst the Member States could be at the expense of trade with third countries or, on the other hand, that the SMP could have the effect of improving market access for third country imports into the EU market, thus to some extent reducing the welfare gains for the EU. The expected impact of the SMP on foreign direct investment is complex. On one hand, because the single market lowers cross-border trade costs, it could increase trade relative to FDI. Conversely, for Member States whose locational advantages are significantly improved by the SMP (because of market integration and the dynamic impact on economic growth), FDI will increase relative to trade.

The chapter is divided in two sections: the first one looking at the trade issue and the second one at FDI. In each section, we first discuss the expected theoretical impact of removing barriers in the development of trade within the EU, then we analyse the main trade (FDI) indicators of evolving market integration. The question we want to answer is to what extent there is any evidence of changing patterns in terms of trade (FDI) throughout the EU between 1985 and 1995. Finally, on the basis of the theoretical framework, which determines the conditions under which the SMP was expected to change the EU's trade (FDI), we assess the extent to which the removal of trade barriers due to the SMP explains the observed changes in the patterns of trade (FDI).

4.2. Trade

4.2.1. Expected impact of the single market programme

The removal of non-tariff barriers and the completion of the SMP has important implications for trade patterns. The theoretical effects of economic integration have been well known for a long time,[1] and the basic tools to analyse these effects can be found as far back as Viner (1950), who coined the concepts of trade creation and trade diversion. The SMP will expand trade amongst Member States as they remove trade barriers with each other (trade creation). Furthermore, depending on the relative importance of remaining external trade barriers, one could also expect increasing trade amongst partners at the expense of trade with third countries (trade diversion).

With regard to integration, changes in the composition of trade also matter. The gains from economic integration differ depending on the type of trade. Trade in different products (inter-industry) between countries brings efficiency gains, but it could also entail redistributive implications and adjustment costs since production could remain only in the most efficient producer country and disappear in the others. On the other hand, trade in similar products (intra-industry) benefits the consumer by providing a much wider variety of products, whilst adjustment costs are lower as the geographical distribution of production does not change drastically. Finally, however, for certain sectors with increasing returns to scale, integration may change the spatial organization of the production process, also affecting the location of demand, which could lead to changes in the spatial distribution of welfare within the integrated area.

4.2.1.1. Trade creation and trade diversion

The SMP will lead to internal trade creation if the removal of trade barriers within the EU replaces local production by intra-EU imports. Analogously, the SMP will result in internal trade diversion if remaining extra-EU trade barriers lead to switching from third countries to intra-EU imports. On the other hand, we can find evidence of external trade creation and diversion when the removal of trade barriers within the EU leads to lower external trade barriers in a Member State that formerly had higher external barriers and when domestic production and intra-EU imports, respectively, are replaced by extra-EU imports. Finally, there exists the possibility of trade suppression when the SMP allows certain EU firms to exploit economies of scale and expand domestic production at the expense of both intra and extra-EU imports.

Although the effects described above implicitly refer to the direct impact of import prices on trade flows, in theory it is not difficult to extend the analysis to changes in trade patterns arising from competition, scale and dynamic effects of the

[1] Viner (1950), Lipsey (1957), Balassa (1961), Mayes (1978) and, most recently, Baldwin and Venables (1995) are some relevant references of more than four decades of subsequent research in this area.

SMP.[1] The only difference is that the a priori impacts concerning trade creation become more ambiguous. Theoretical findings of international trade models under imperfect competition,[2] suggest that further changes in trade patterns can result if the increase in market size induces higher competition amongst firms, permits the exploitation of large economies of scale and/or changes the number of varieties sold in any industrial sector.[3] The removal of non-tariff barriers could increase intra-EU trade as long as liberalization cuts price-cost margins within the EU and leads to larger-scale production by fewer firms. On the other hand, if higher market integration reduces the room for market power so that firms become price takers, the reduction in price-cost margins could make partner-country markets less attractive, thus reducing intra-EU trade (negative trade creation). However, there is less ambiguity about trade diversion. The cutting of price-cost margins and larger-scale production will improve EU-based firms' competitiveness and generate trade diversion. As regards dynamic effects, they stem from recent developments of endogenous growth theories, which foresee effects of integration on saving, investment and growth and, thus, on trade flows.[4] If integration leads to increased income, saving and investment in the EU, then both intra- and extra-EU trade will increase.[5]

4.2.1.2. Intra- versus inter-industry trade

Since the 1960s, economists have been aware that the bulk of contemporary international trade takes place between similar countries, which trade similar products (intra-industry trade — IIT). Such empirical evidence questioned the conventional view of international trade, based on differences between countries producing goods under constant returns, and led to the development of the new theory of trade, which complements comparative advantage with trade under imperfect competition. From the perspective of the theory of economic integration under imperfect competition, the SMP would lead to an increase of intra-industry trade between the more developed Member States.

The effects of the SMP and economic integration on trade are therefore complex. In the traditional analysis of international trade, the SMP should lead to greater specialization by countries on the basis of their respective comparative advantages. The SMP would, in that case, favour an increase of inter-industrial trade, each Member State specializing primarily in the sectors where it is relatively efficient. However, if we take into account imperfect competition and product differentiation, the SMP could increase intra-industry trade, the simultaneous import and export of similar product lines between Member States (e.g. cars for cars) (Balassa, 1965, Greenaway D., Milner C., 1986). Finally, agglomeration economies could lead to the concentration of economic activities in countries initially advantaged, resulting in an increase of inter-industry trade.

The gains from economic integration differ between these two types of trade (inter-industry trade and intra-industry trade). Inter-industry trade between different countries brings efficiency gains, with each country specializing in those activities in which it is relatively more efficient, whilst consumers gain lower prices as a consequence. However, this implies a deeper specialization between the less developed Member States and the more advanced, each country experiencing a contraction of some of its sectors and expansion of others (e.g., clothing vanishing in high labour cost countries, and high-tech in low skill ones). The redistributive implications of this are considerable and the adjustment process costly.

By contrast, intra-industry trade benefits the consumer by leading to a much wider variety of products, whilst producers face lower adjustment costs. Here, adjustments take place amongst firms inside industries rather than among industries. As Member States' industrial structures remain roughly similar, the EU becomes more diversified and is therefore less vulnerable to sector specific shocks (e.g., increases in the price of oil, etc.). A shock has no very different effects depending on the Member State (no asymmetric shocks). This is particularly important within a monetary union.

4.2.1.3. Location and geographical specialization

Agglomeration effects may lead to a concentration of firms in the 'country' with an initial advantage, due to the relatively easy availability of relevant sector-specific resources, leading to a comparative advantage. On the other hand, the size of the country may provide more opportunity for the exploitation of external economies of scale so that certain industries in large countries may operate at lower costs, counter-balancing initial comparative disadvantages.[6]

[1] See Cox and Harris (1985), Smith and Venables (1988) and Jacquemin and Sapir (1991).

[2] See Ethier and Horn (1984) and Smith and Venables (1988).

[3] The traditional approach recognized that there could be such secondary effects (sometimes referred to as dynamic effects), but satisfactory treatment of such effects became possible only after the development in the late 1970s of trade models under imperfect competition.

[4] See, for instance, Baldwin (1989) and Rivera and Romer (1991).

[5] See Baldwin (1989).

[6] The 'home market effect', the tendency of countries to export goods for which they have a large domestic market, was analysed in Krugman (1980). A more detailed analysis of external economies and agglomeration effects can be found in Krugman (1991).

The spatial organization of the whole production process will be shaped by the available technology providing the possibility of economies of scale, the location of demand, the availability and prices of factors of production in different locations, and the structure of markets (Helpman and Krugman, 1985, Krugman, 1991).[1]

The impact of the integration of products, services and factors of production on the location of economic activity is a central issue. In the neo-classical and Hecscher-Ohlin-Samuelson models, the cost of factors of production and their profitability tend to converge when barriers are removed. However, the result of such models depends particularly on the assumption that markets are functioning efficiently and there are no barriers to movements. From that point of view, the comparison of the cost of capital and the cost of labour and their evolution between the EU countries is particularly relevant.

Economic theory presents arguments for increasing or decreasing convergence in the costs of factors of production among countries. On one hand, the increasing international integration of goods and services markets will lead to equalization of factor incomes: wages and costs of capital. On the other hand, the movement of labour is restricted by cultural, institutional and spatial factors whereas the movement of capital is free following the implementation of the directives on the free movement of capital.

[1] The distribution of welfare among the different Member States of the EU in an integrated European market is an issue of very high political sensitivity. This will be developed in the next chapter.

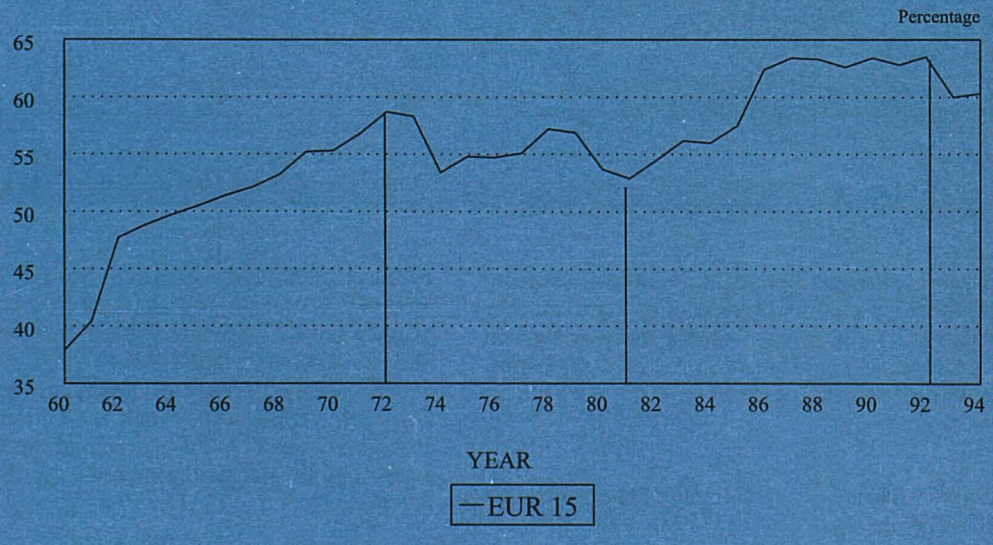
4.2.2. General overview of trade within the EU

4.2.2.1. Evolution of EU trade

Following Jacquemin and Sapir (1988), the extent of regionalization is often measured by the share of intra-area trade in total trade and relative increases in the importance of intra-area trade are proof of increasing integration.

Graph 1 compares the evolution of intra-EU imports in goods with total EU imports. Several periods can clearly be distinguished. During 1960-72, the EU's share of imports rose steeply from 38 to 54%. The second period (1972-81) is characterized by a steep decline in 1973 followed by a period of relatively stability around 50%. In contrast, the period from 1981 to 1992 is characterized by a relative recovery of intra-EU trade with the index increasing from 1984 to 1987 and then again stagnating around 58 to 59%. Unfortunately for

GRAPH 1: **The share of intra-EU 15 imports in total imports for EUR 15, trade in goods**



Source: AMECO (DG II).

Table 1

Share of intra-EU trade in total trade, manufacturing

		Intra-EU exports (share in % *vis-à-vis* world)	Intra-EU imports (share in % *vis-à-vis* world)
EUR	1985	53.7	61.2
	1995	67.8	67.9
BLEU	1985	71.7	70.4
	1995	79.5	74.8
DK	1985	42.2	53.2
	1995	67.3	74.7
D [1]	1985	49.6	56.7
	1995	62.8	62.9
EL	1985	52.4	67.7
	1995	59.0	74.7
S	1985	51.3	61.6
	1995	69.8	77.1
F	1985	51.9	68.9
	1995	68.0	74.2
IRL	1985	68.8	72.4
	1995	82.1	73.8
I	1985	48.3	58.8
	1995	58.2	66.1
NL	1985	73.7	64.6
	1995	81.6	66.3
P	1985	63.6	70.7
	1995	81.8	84.0
UK	1985	44.7	54.4
	1995	64.4	59.3

[1] 1985: West Germany.
1995: Whole Germany.

Source: Eurostat.

Table 2

Share of intra-EU trade in total trade, services

		Intra-EU exports (share in % *vis-à-vis* world)	Intra-EU imports (share in % *vis-à-vis* world)
EUR	1985	42.6	46.9
	1993	50.2	50.0
BLEU	1985	62.9	63.0
	1993	69.3	62.1
DK	1985	28.6	44.3
	1993	31.3	39.2
D [1]	1985	37.4	42.9
	1993	43.6	45.7
EL	1985	43.2	44.1
	1993	50.1	49.6
S	1985	57.8	48.3
	1993	69.2	60.5
F	1985	39.4	43.4
	1993	46.0	47.5
IRL	1985	61.1	62.4
	1993	59.7	59.9
I	1985	53.2	49.7
	1993	54.0	50.6
NL	1985	53.6	51.6
	1993	59.5	54.3
P	1985	49.4	51.0
	1993	70.3	71.7
UK	1985	24.4	39.2
	1993	30.8	40.8

[1] 1985: West Germany.
1995: Whole Germany.

Sources: Eurostat; Coopers and Lybrand (1993). Bureau of Labour Statistics.

comparitive purposes, there is a break in the time series from 1993 on. The elimination of all customs documentation means that intra-EU trade data are now recorded in a new way and it is clear that a significant discontinuity in the data series has arisen.[1] Meanwhile, records of extra-EU trade continue unchanged.

Tables 1 and 2 give the share of each Member State's intra-EU and extra-EU trade in total trade in 1985 and 1995 for manufacturing and services. For exports the period between 1985 and 1995 registered a significant increase in the share of intra EU trade: on average +14 points for manufacturing exports and +7.6 points for exports of services. For imports, this increase is less significant: +6.7 points for manufacturing imports and +3.1 points for imports of services. For Spain and Portugal, which both joined the Community in 1986, the combined effects of accession and the developing internal market led to spectacular increases in the import and export shares.

A country's domestic demand is met by a combination of domestic production (share of output not exported), imports

[1] See Box 1 in Chapter 2.

from other Member States (intra-EU imports) and imports from outside the EU (extra-EU imports). For EU manufacturing products, domestic production supplied 66% of domestic demand in the EU on average in 1985, and 57.5% in 1995 (a fall of 8.5 points), whilst the part supplied by intra-EU imports increased from 19.7 to 25.6% in 1995 (+5.1 points), and the share supplied by extra-EU imports increased by 2.8 points over the same period[1] (see Graph 2). However, the comparison of 1995 with 1985 does not give a fair picture of the relative increase of intra- and extra-EU imports. As shown in Box 1 of Chapter 2, the introduction of the Intrastat system in 1993 significantly affects these figures and underestimates the increase of intra-EU import shares. Between 1985 and 1992 the share of extra-EU imports remained almost stable at around of 14%, whilst intra-EU shares jumped from 19.7 to 24.1% (+4.4 points). However, the comparison between 1992 and 1995 would lead to the opposite conclusion. Extra-EU shares jumped by 2.7 points during the period 1992/95, but the part of domestic demand supplied by intra-EU imports only grew by 1.7 points. This relatively low growth of intra-EU imports is just a statistical illusion due to the change in the intra-EU trade reporting system. The evolution of import shares over the period 1993/95, which only includes data gathered under Intrastat, shows that intra-EU import shares increased 85% more than extra-EU import shares (2.4 against 1.3 percentage points for respectively intra- and extra-EU import shares). We can therefore conclude that, when comparing homogeneous figures, and regardless of the period considered, the part of the EU demand supplied by intra-EU imports has grown much faster than that supplied by extra-EU producers.

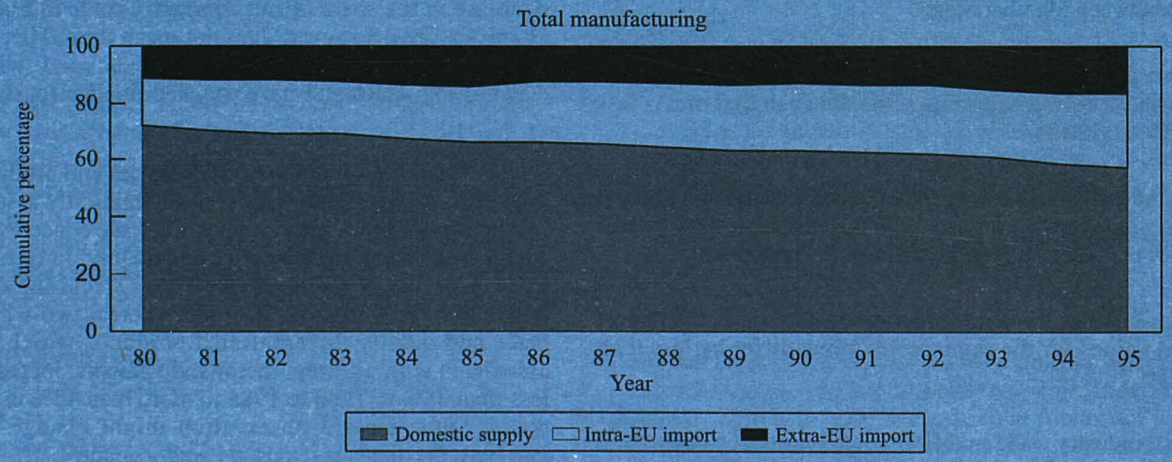
In services, the penetration of domestic demand by imports is much less marked: on average 4% of domestic demand of services is covered by intra-EU imports and 4% by extra-EU imports (Graph 3).

4.2.2.2. The development of intra- versus inter-industry trade

In this part we turn to the patterns of intra-EU trade over the past 15 years at the most aggregated level, all countries and products taken together. The CEPII (1996) has proposed a method which allows each year's total trade to be broken down into three trade types according to the similarity in unit values for exports and imports (proxy for prices and therefore quality)

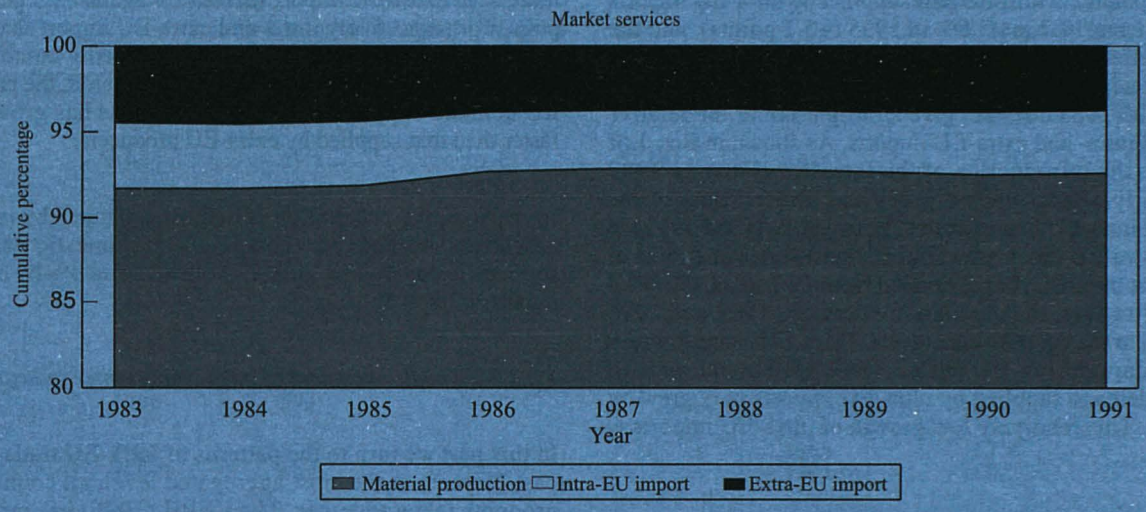
[1] From 14.1% in 1985 to 16.9% in 1995.

GRAPH 2: **Composition of apparent consumption, EUR 12**



Weighted average
Source: DEBA.

GRAPH 3: **Composition of apparent consumption, EUR 7**[1]



[1] EUR 7: D, F, I, NL, DK, E, P.
Source: BDS, balance of payments.

and the degree of overlap between imports and exports in trade (Box 1) between Member States.

- Inter-industry trade (or one-way trade): when exports and imports for the same product line are such that one is less than 10% of the other.

- Intra-industry (or two-way trade): when exports and imports for the same product line are such that one represents at least 10% of the other. Intra-industry trade is divided into:

  - intra-industry trade in similar products: export and import unit values for the same product line differ by less than 15%;

  - intra-industry trade in differentiated products: export and import unit values for the same product line differ by more than 15%.

The most important trade type at the beginning of the 1980s was one-way trade (with a share of some 45%). The preparation phase of the SMP has been accompanied by a decrease in the share of inter-industry trade in Europe (see Graph 4). This, however, does not mean that SMP *per se* has caused this event; it could be associated with other determinants which may have operated simultaneously.

At this level of presentation (all countries and products taken together), in contrast to what is often implicitly assumed, the rise in intra-industry trade in intra-EU trade concerns products which are differentiated by price and quality. In fact, two-way trade in similar products remains rather stable and represents less than 20% of all intra-EU trade, whereas two-way trade in price and quality differentiated products, which could be associated with different factor endowments, increased from less than 35% in 1980 to 1985 to more than 42% in 1994. Of course, this general observation might change once we introduce the dimension industry and/or country.

Table 3 displays the shares of the three trade types for each country in 1994, as well as their changes between 1987 and 1994. Two groups of countries can roughly be distinguished:

Box 1: Methodology on intra- versus inter-industry trade

The methodology used by the CEPII has the following characteristics:

(1) Minimizes the bias arising from sectoral aggregation by using far more desegregated classifications. The classification of the 8-digit 'combined nomenclature (CN)' (and, until 1987, the 6-digit Nimexe) provides some 10 000 items, which are sufficiently detailed for products to be distinguished by their principle, technical characteristics.

(2) Minimizes the bias of geographic aggregation by only considering bilateral flows.

(3) Considers, depending on the degree in overlap, both exports and imports as being as part of either two-way trade or one-way trade; trade in an item is considered to be 'two-way' when the value of the minority flow (for example imports) represents at least 10% of the majority flow (exports in this case). Below this level, the minority flow cannot be considered significant as it does not represent a structural feature of trade.

(4) Distinguishes between vertical and horizontal differentiation by incorporating *price differences*. It is assumed that differences in prices (unit values) reflect quality differences. Therefore, products whose unit values are close (in a given year) are considered as similar. Traded products are considered to be similar (or horizontally differentiated) if the export and import unit values differ by less than 15%. (Abd El Rahman, 1991, Greenaway, Hine and Milner, 1994, also used a 15% threshold). When this is not the case, products are considered to be vertically differentiated.

The table below provides the typology of trade used in the CEPII report.

How to define the three trade types

Degree of overlap between exports and import values: Does the minority flow represent at least 10% of the majority flow?	**Definition of which flow?**	**Similarity of export and import unit values:** Do export and import unit values differ less than 15%?	
		Yes (vertical differentiation)	No (horizontal differentiation)
Yes (Two-way trade)	Both exports and imports	**Two-way trade in similar products**	**Two-way trade in vertically differentiated products**
No	Majority flow	**One-way trade**	
(One-way trade)	Minority flow	Residual	

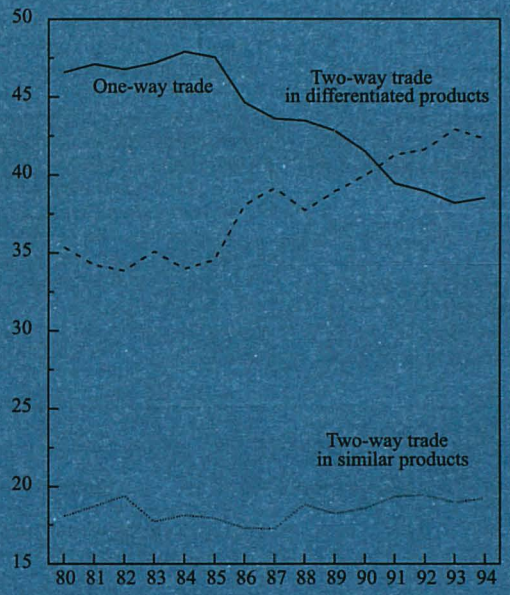
Note : By construction, the residual trade represents a very small part of all trade. While being calculated separately, it is presented together with one-way trade.

(a) The first group is composed of countries for which one-way trade accounts for more than half of all trade. These countries are characterized by an inter-industry specialization. As far as they engage in intra-industry trade, two-way trade is predominantly done in goods differing in quality. With the exception of Denmark, the countries in this group (Greece, Portugal, Ireland) have lower levels of economic development. For Denmark, strong specialization in a limited number of sectors explains this figure.

(b) The second group is characterized by a high share of two-way trade. It corresponds mainly to the large 'European traders'. While two-way trade in similar products is more important in this group than in the first one, intra-industry trade is mostly done in differentiated products, suggesting a specialization within products by quality ranges. Two-way trade in similar products is particularly important for France, Belgium/Luxembourg and Germany, and two-way trade in quality-differentiated products for the United Kingdom, Germany and France. Due to its rapid convergence towards the trade structure of the more developed European countries, Spain is now part of this group and in a situation similar to Italy's.

For each country, two-way trade in quality differentiated products is more important than two-way trade in similar products. This underlines the particular interest of where the different Member States are positioned in relation to different market segments, as this might have important consequences in terms of income distribution. From a policy point of view, it must be borne in mind, when interpreting such a pattern of trade, that high 'quality' (as revealed by prices) can be attributed to more R&D, more highly qualified labour, the

GRAPH 4: **Evolution of trade types in intra-EU trade, 1980-94**



Inter-industry trade: one-way trade
Intra-industry trade: two-way trade
Source: Eurostat-Comext, calculations by the CEPII.

Table 3

Share of trade types in intra-EU trade by country, 1994

	Share in 1994 (%)			Variation 1987 to 1994 (% points)		
	Two-way trade in similar products	Two-way trade in differentiated products	One-way trade	Two-way trade in similar products	Two-way trade in differentiated products	One-way trade
France	**24.1**	**44.3**	31.6	**2.8**	**3.6**	**– 6.4**
Germany	**20.5**	**46.9**	32.6	1.9	**3.4**	**– 5.4**
Belgium-Lux	**23.2**	42.0	34.8	1.6	2.2	– 3.8
United Kingdom	16.5	**47.9**	35.6	– 1.9	**8.9**	**– 7.0**
Netherlands	18.9	41.9	**39.3**	– 0.3	**5.1**	– 4.8
Spain	18.9	35.2	**45.9**	**8.7**	**3.3**	**– 12.0**
Italy	16.2	36.9	**46.9**	**5.8**	– 3.1	– 2.8
Ireland	7.9	34.4	**57.7**	– 0.9	– 1.3	2.2
Denmark	8.1	31.9	**60.0**	– 1.1	– 0.0	1.1
Portugal	7.5	23.9	**68.6**	**3.9**	**4.8**	**– 8.6**
Greece	3.7	10.3	**86.0**	0.8	– 0.6	– 0.2
EC 12	19.2	42.3	38.5	2.0	3.1	– 5.1
EC without Spain and Portugal	19.5	43.1	37.4	1.7	3.3	– 5.0

Source: Eurostat-Comext, calculations by the CEPII

The countries are ranked according to the importance of two-way trade in all trade. Figures in bold indicate higher-than-average shares or variations.

specific organization of firms' internal procedures, or large investments in advertising.

In order to understand this qualitative division of labour in Europe better, we compare — year by year, and product by product — unit values for each trade flow with a European average. Here again, we assume that differences in prices (unit values) reflect quality differences. As exports and imports are analysed separately, flows for the same product with a given trade partner can exist in different European price-quality ranges:

- high price-quality products: unit values exceeding the EU average by at least 15%;
- low price-quality products: more than 15% below the EU average;
- medium price-quality products: between +/- 15% around the EU average.

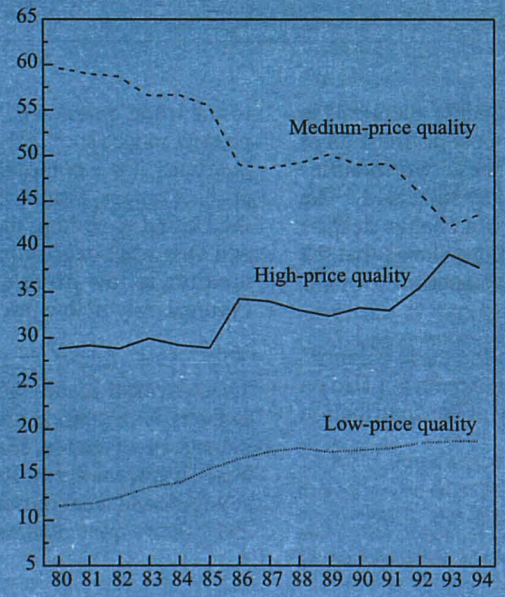
Graph 5 shows that the most important market segment, medium price-quality products saw their share actually decline (by some 15 points). This means that the dispersion of unit values has grown throughout the last 15 years. The correlated increase of trade in high and low price-quality products means a specialization of countries over the quality spectrum.

Table 4 plots the evolution of intra-EU exports and imports by price-quality range. In 1994, we can clearly distinguish two groups of countries when we look at exports. For a certain number of countries, high price-quality products represent more than 40% of total exports in 1993/94: Ireland (53.8%), Germany (47.7%), Denmark (41.7%), UK (40.5%) and France (39.9%). In contrast, low price-quality products represent more than 25% of total exports for Portugal (34%), Greece (31%), Spain (28.9%) and Italy (28.5%).

If the results of Germany are compatible with the image of 'high-quality products', the role of foreign affiliates using Ireland as a location for assembly lines is certainly particularly important in explaining its share of high-quality products in exports.

The specialization of the different appreciating or depreciating countries has been unaffected by monetary fluctuations. Analysis at the industry level shows that currency depreciation has not led Italy to low quality specialization in its key industries: its primary comparative advantage remains in high-quality textiles. The same remark can be made for the United

GRAPH 5: **Evolution of intra-EU trade by price-quality range, 1980-94**



Source: Eurostat-Comext, calculations by the CEPII.

Table 4

Price-quality structure of exports and imports in intra-EU trade, 1985/86 and 1993/94

Country	1985/86			1993/94			Variation 85/86 to 93/94		
	Low	Medium	High	Low	Medium	High	Low	Medium	High
Export									
BLEU	17.4	57.8	24.9	18.1	50.0	31.9	0.7	- 7.7	7.0
DK	16.4	45.6	38.1	19.8	38.4	41.7	3.5	- 7.1	3.7
D	11.9	46.4	41.7	14.0	38.6	47.4	2.1	- 7.8	5.7
EL	32.8	50.8	16.4	31.0	42.3	26.7	- 1.8	- 8.6	10.3
E	29.3	50.8	19.9	28.9	48.0	23.1	- 0.4	- 2.8	3.1
F	12.2	54.6	33.2	14.9	45.2	39.9	2.7	- 9.4	6.8
IRL	19.6	31.1	49.3	21.3	24.9	53.8	1.7	- 6.2	4.5
I	26.9	47.1	26.0	28.5	39.4	32.2	1.6	- 7.8	6.2
NL	13.2	64.9	21.9	15.4	50.9	33.7	2.3	- 14.1	11.8
P	37.0	42.2	20.8	34.1	39.6	26.3	- 2.9	- 2.6	5.5
UK	15.5	51.5	33.0	20.5	39.1	40.5	5.0	- 12.5	7.5
Import									
BLEU	17.8	54.8	27.3	19.9	45.2	34.9	2.1	- 9.7	7.6
DK	16.2	43.9	40.0	20.8	32.9	46.3	4.6	- 11.0	6.3
D	14.0	58.7	27.4	14.2	46.4	39.4	0.3	- 12.3	12.0
EL	21.2	40.9	38.0	21.5	37.0	41.6	0.3	- 3.9	3.6
E	24.0	43.4	32.6	23.8	40.4	35.8	- 0.2	- 3.0	3.2
F	15.7	54.4	30.0	19.2	44.1	36.7	3.5	- 10.2	6.7
IRL	27.9	42.2	29.9	28.3	30.3	41.4	0.4	- 11.9	11.5
I	10.1	52.2	37.7	15.1	43.7	41.2	5.0	- 8.5	3.5
NL	20.5	52.8	26.7	19.6	45.2	35.2	- 0.9	- 7.6	8.5
P	21.7	36.4	41.9	22.8	41.0	36.2	1.1	4.7	- 5.8
UK	16.1	44.5	39.4	21.8	36.7	41.6	5.7	- 7.9	2.1
EC -12	16.1	52.3	31.6	18.7	42.9	38.4	2.5	- 9.3	6.8

Source: Eurostat-Comext, calculations by the CEPII.

For each year, relative shares of price-quality ranges add up to 100%. The variation is in percentage points.

Kingdom, showing a specialization in high-quality chemicals in 1994. These results may thus serve as an ex-post justification of the indicator of price-quality ranges, since these two countries are still able to sell at high prices in their key industries. The fact that the degree of specialization does not change despite the existence of significantly large fluctuations shows that the indicator is unaffected by exchange rate movements.

Finally, an analysis of 'the contribution to the trade balance' (G. Lafay, 1990), which focuses not only on exports but also on imports, is particularly interesting.[1] Scrutiny of the contribution to the trade balance of low, medium and high price-quality product ranges spotlights different country groupings (Table 5). Germany has a comparative advantage in high price-quality product ranges, France in medium to high price-quality ranges, the United Kingdom, the Netherlands, Belgium, Luxembourg and Denmark only in medium price-quality ranges, Spain in medium to low price-quality ranges, and Italy, Greece and Portugal only in low price-quality ranges.

These overall results need nevertheless to be examined at an industry level, taking into account the contribution to the trade balance of 14 sectors for the three price-quality ranges defined here (high, medium, low). Analysis based on the first five strengths and weaknesses by industry and price-quality range in 1994 shows quite contrasting patterns across countries:

- Some countries are specialized in certain industries over the whole price-quality spectrum: Denmark for agriculture and Greece for textiles.

[1] The contribution to the trade balance used by the CEPII is an indicator which compares an industry's performance to the overall one. If there is no comparative advantage (or disadvantage) for any industry j (in a given country) then total trade surplus (or deficit) should be distributed across industries according to their share in total trade:

$$(X_j - M_j)\left[1 - \frac{X_j + M_j}{X_j - M_j} \times \frac{X - M}{X + M}\right]$$

by definition, the sum over all industries is zero.

Table 5

The national strengths in intra-EU trade by price-quality range, 1994

Country	Price-quality range		
	Low	Medium	High
Ireland			+
Germany			+
France		+	+
United Kingdom		+	
Netherlands		+	
Belgium-Luxembourg		+	
Denmark		+	
Spain	+	+	
Greece	+		
Italy	+		
Portugal	+		

Source: Eurostat-Comext and CEPII-CHELEM, calculations by the CEPII.
A + represents a positive contribution to the trade balance of the price-quality ranges.

- Most countries also show a rather strong industrial specialization with two of the first five strengths in the same industry. Here we find the Netherlands (medium — followed by a high in agriculture), Italy (high and medium in textiles and low and medium in non-electrical machinery), the United Kingdom (high and medium in electrical machinery), Ireland (high and medium in non-electrical machinery[1]), Portugal (medium and low in textiles and wood and paper products) as well as Spain (medium and low in motor vehicles and agriculture).

- In this typology, Germany is a clear outlier. Its specialization is not oriented towards specific industries, but clearly towards a price-quality specialization. Germany's five major strengths are all in up-market goods (motor vehicles, non-electrical machinery, electrical machinery, chemicals and other transport).

Concerning welfare, intra-industry trade with price differentiation implies that Member States are more and more specialized inside industries in products with differing price-level ranges, importing low price/quality ranges and exporting high ones, or vice versa. Of course, the situation could differ for different sectors: one country could import high quality clothing and export high quality cars. For most advanced countries such an evolution implies growing intangible investment in R&D, training and innovation to compete in traditional mature industries, and for less advanced countries, the possibility of entering high tech and high value-added sectors and competing on price.

However, manufacturing sectors are not all comparable in terms of the nature of trade (intra- versus inter-industry trade) and therefore in terms of adjustment costs and efficiency gains resulting from the SMP.

In terms of inter- versus intra-industry trade, manufacturing sectors can be broadly divided into two groups: firstly, in food and beverages, mining, textiles and non-metallic minerals, trade is mainly inter-industrial. These sectors represent about one third of total manufacturing value added. Secondly, in non-electrical machinery, professional goods, electrical machinery, motor vehicles, chemicals, wood and paper, trade is mainly intra-industry differentiated by price and quality. These sectors represent about two thirds of total manufacturing value added (see Table 6).

In general, for all sectors between 1985 and 1994 intra-industry trade in price-quality differentiated products increased whilst inter-industry trade decreased. In particular, for sectors traditionally characterized by high inter-industry trade, the implementation of the single market is characterized by a steady increase of intra-industry trade, notably due to an increase of trade in price-quality differentiated products (wood, paper, textile, clothing, food and beverages).

However, in industries traditionally characterized by high levels of intra-industry trade, the latest years of the SMP may be characterized by a decrease of intra-industry trade (electrical machinery, scientific instruments and consumer electronics). This could be the result of specialization along the lines of comparative advantages in a few Member States for the production of these goods.

Finally, the evolution of the car sector is atypical, with a sharp increase of intra-industry trade in similar products and a sharp decrease of inter-industry trade. This could be the result of new EU countries producing more and more cars (Spain) and/or an increasing difficulty in maintaining practices of discrimination in prices for cars between the Member States.

4.2.2.3. Production specialization patterns in Europe

The question of the effects of regional integration on the location of industry is clearly linked to the pattern of trade observed above. Recent work (Brülhart and Tosstensson, 1996) argues that employment in scale intensive industries tends to be concentrated at the centre of the EU, which explains why intra-industry trade tends to be relatively low in such sectors.

[1] In our industrial breakdown, non-electrical machinery includes some automatic data processing equipment.

Table 6

Share of trade types in intra-EC trade by industry

	Share in 1994 (%)			Variation 1987 to 1994 (% points)		
	Two-way trade in similar products	Two-way trade in vertically differentiated products	One-way trade	Two-way trade in similar products	Two-way trade in vertically differentiated products	One-way trade
Prof. goods[1]	13.9	**57.9**	28.3	**- 3.9**	0.4	3.5
Other transport[2]	**47.6**	33.8	18.5	1.2	**6.8**	**- 8.0**
Non-electr. machinery	14.4	**58.1**	27.5	**- 3.9**	3.1	0.5
Electr. machinery	14.2	**53.4**	32.4	- 0.1	- 3.1	3.6
Other industries[3]	5.9	**57.0**	37.2	**- 6.0**	2.0	3.9
Chemicals	**20.3**	**45.5**	34.3	**- 2.6**	**5.8**	- 3.3
Motor vehicles	**40.4**	41.8	17.8	**19.1**	1.9	**- 21.0**
Wood and paper	**20.2**	**46.9**	32.9	**- 3.3**	**10.1**	**- 6.8**
Basic metals	**25.5**	35.2	**39.3**	- 2.0	**6.1**	- 4.2
Non-met. minerals	11.6	38.7	**49.7**	1.3	0.0	- 1.4
Textiles	10.7	40.4	**48.9**	**- 3.2**	**9.2**	**- 6.0**
Food and beverages	12.5	26.6	**60.9**	0.8	**8.7**	**- 9.5**
Mining and quarrying[4]	**19.6**	12.6	**67.8**	**4.4**	- 1.0	- 3.4
Agriculture	9.3	16.8	**73.9**	**2.6**	**5.2**	**- 7.8**
Average	19.2	42.3	38.5	2.0	3.1	- 5.1

[1] Professional goods mainly include scientific instruments, musical instruments, televisions, video recorders.
[2] Other transport mainly includes railway and aerospace equipment.
[3] Other manufacturing mainly includes weapons, furniture and toys.
[4] Mining and quarrying mainly includes minerals, cement and petroleum products.

Source: Eurostat-Comext, calculations by the CEPII

The industries are ranked according to the importance of two-way trade in all trade. Figures in bold indicate higher-than-EC-average shares (or variations).

However, as the authors conclude, these findings should be considered as suggestive rather than conclusive due to data limitations and the relatively simplistic definition of increasing returns. The analyses of the effect of the SMP on the structure of production within the EU are mainly in line with Krugman's observations in 'Geography and Trade' (1991). The author concludes on the basis of a comparison between the structure of production of regions of the US and big countries in Europe, comparable in terms of economic size and population, that European countries are less specialized than US regions. For Krugman, this situation arose due to the existence of barriers to trade between European countries and he therefore concludes that the SMP could create the conditions for more specialization between EU countries particularly in sectors operating under increasing returns to scale.

Tables 7 and 8 present the correlation matrix calculated for NACE 3 digits manufacturing sectors (around 100 sectors) in terms of value added.

When the structure of value added in two different countries is the same, the index will be equal to 1. In contrast, the index will be equal to nil or even negative when the structures of production are very different. The matrix has been elaborated for two years, 1985 and 1994.

Countries with higher labour costs and lower costs of capital have very similar sectoral structures of value added in manufacturing. Germany, France, Italy and UK (coefficient of correlation more than 0.8). On the other hand, countries with lower labour costs and higher costs of capital have similar structures of value added: Greece, Portugal and Spain (coefficient of correlation more than 0.8). However, the case of Spain is different from the other two, since its production structure is also highly correlated with Denmark, France, the Netherlands and the UK. Moreover, for small countries such as Belgium, the Netherlands, Denmark or Finland, the results are sometimes contradictory and the interpretation is complex.

Table 7

Correlation matrix: sectoral breakdown of manufacturing value added, 1985

	B	DK	D	EL	E	F	IRL	I	NL	P	UK
BE	1	0.411	0.747	0.455	0.589	0.734	0.275	0.762	0.757	0.397	0.722
DK	0.411	1	0.528	0.586	0.832	0.621	0.744	0.705	0.802	0.592	0.841
D	0.747	0.528	1	0.214	0.479	0.872	0.136	0.868	0.648	0.165	0.831
EL	0.455	0.586	0.214	1	0.817	0.508	0.658	0.567	0.569	0.885	0.545
E	0.589	0.832	0.479	0.817	1	0.731	0.759	0.693	0.817	0.732	0.816
F	0.734	0.621	0.872	0.508	0.731	1	0.416	0.859	0.776	0.456	0.922
IRL	0.275	0.744	0.136	0.658	0.759	0.416	1	0.373	0.699	0.571	0.563
I	0.762	0.705	0.868	0.567	0.693	0.859	0.373	1	0.759	0.567	0.890
NL	0.757	0.802	0.648	0.569	0.817	0.776	0.699	0.759	1	0.573	0.881
P	0.397	0.592	0.165	0.885	0.732	0.456	0.571	0.567	0.573	1	0.539
UK	0.722	0.841	0.831	0.545	0.816	0.922	0.563	0.890	0.881	0.539	1

Correlation matrix: sectoral breakdown of manufacturing value added, 1994

	B	DK	D	EL	E	F	IRL	I	NL	P	UK
B	1	0.455	0.751	0.400	0.659	0.847	0.391	0.676	0.653	0.287	0.789
DK	0.455	1	0.583	0.756	0.844	0.693	0.766	0.729	0.900	0.735	0.836
D	0.751	0.583	1	0.218	0.578	0.880	0.298	0.879	0.646	0.256	0.784
EL	0.400	0.756	0.218	1	0.840	0.536	0.828	0.498	0.784	0.890	0.675
E	0.659	0.844	0.578	0.840	1	0.834	0.745	0.661	0.879	0.812	0.886
F	0.847	0.693	0.880	0.536	0.834	1	0.571	0.842	0.844	0.522	0.932
IRL	0.391	0.766	0.298	0.828	0.745	0.571	1	0.468	0.823	0.662	0.669
I	0.676	0.729	0.879	0.498	0.661	0.842	0.468	1	0.780	0.556	0.828
NL	0.653	0.900	0.646	0.784	0.879	0.844	0.823	0.780	1	0.706	0.918
P	0.287	0.735	0.256	0.890	0.812	0.522	0.662	0.556	0.706	1	0.619
UK	0.789	0.836	0.784	0.675	0.886	0.932	0.669	0.828	0.918	0.619	1

If we do the same calculations for the correlation matrix on the trade structures for manufacturing (Table 8), the groupings are similar but these similarities measured by the correlation coefficients are smaller than for the production structure. This could be because internal consumption patterns which are the main explanatory factor for production structures are relatively similar between EU countries.[1]

A comparison of the correlation matrix for value added and exports for both 1985 and 1994 presents an interesting result. In the nine years following the launch of the SMP in 1985, there has been a tendency towards more convergence in terms of structures of manufacturing production.

4.2.3. Assessment of the effect of the SMP on trade

4.2.3.1. Trade creation and trade diversion

Allen, Gasiorek and Smith (1996) assess the effects of the SMP on trade flows in the EU through the estimation of an econometric model of demand for imports in the EU. The effect of the SMP is computed as a residual or difference between the observed trade flows and those predicted by the model. The approach followed by Allen et al. (1996) improves upon previous studies[2] by proceeding to a full specification of the supply side of the model within an explicit oligopoly setting. Their econometric analysis is able to examine the effects of the SMP on both supply and demand within particular markets.

[1] The correlation of the pattern of demand is much higher than the one for production and export, even between the southern and the northern European countries.

[2] See Winters (1987) and Appendix 1.

Table 8

Correlation matrix: sectoral breakdown of manufacturing exports, 1985

	B	DK	D	EL	E	F	IRL	I	NL	P	UK
B	1	0.310	0.658	0.320	0.790	0.788	0.323	0.393	0.640	0.057	0.617
DK	0.310	1	0.304	0.431	0.171	0.532	0.657	0.353	0.779	0.168	0.489
D	0.658	0.304	1	- 0.380	0.746	0.903	0.179	0.641	0.494	- 0.005	0.789
EL	0.320	0.431	- 0.380	1	0.343	0.252	0.300	0.337	0.435	0.694	- 0.034
E	0.790	0.171	0.746	0.343	1	0.802	0.118	0.408	0.436	0.159	0.433
F	0.788	0.532	0.903	0.252	0.802	1	0.426	0.558	0.761	0.091	0.809
IRL	0.323	0.657	0.179	0.300	0.118	0.426	1	0.086	0.784	0.048	0.463
I	0.393	0.353	0.641	0.337	0.408	0.558	0.086	1	0.310	0.463	0.638
NL	0.640	0.779	0.494	0.435	0.436	0.761	0.784	0.310	1	0.157	0.636
P	0.057	0.168	- 0.005	0.694	0.159	0.091	0.048	0.463	0.157	1	- 0.700
UK	0.617	0.489	0.789	- 0.034	0.433	0.809	0.463	0.638	0.636	- 0.700	1

Correlation matrix: sectoral breakdown of manufacturing exports, 1994

	B	DK	D	EL	E	F	IRL	I	NL	P	UK
B	1	0.367	0.722	0.208	0.715	0.618	0.373	0.305	0.590	- 0.010	0.703
DK	0.367	1	0.375	0.441	0.162	0.502	0.640	0.341	0.832	0.053	0.477
D	0.722	0.375	1	- 0.056	0.720	0.778	0.336	0.726	0.492	0.036	0.851
EL	0.208	0.441	- 0.056	1	0.023	0.084	0.243	0.217	0.384	0.527	- 0.005
E	0.715	0.162	0.720	0.023	1	0.673	0.117	0.345	0.274	0.134	0.463
F	0.618	0.502	0.778	0.084	0.673	1	0.442	0.412	0.597	- 0.008	0.740
IRL	0.373	0.640	0.336	0.243	0.117	0.442	1	0.070	0.893	- 0.014	0.676
I	0.305	0.341	0.726	0.217	0.345	0.412	0.070	1	0.205	0.387	0.517
NL	0.590	0.832	0.492	0.384	0.274	0.597	0.893	0.205	1	- 0.019	0.714
P	- 0.010	0.053	0.036	0.527	0.134	- 0.008	- 0.014	0.387	- 0.019	1	- 0.041
UK	0.703	0.477	0.851	- 0.005	0.463	0.740	0.676	0.517	0.714	- 0.041	1

Box 2 presents a more detailed description of this methodology.

In order to maximize the efficiency of estimation, they have chosen to concentrate the analysis on examining total manufactures plus 15 three-digit level manufacturing sectors, which account for 35.7% of total EU manufacturing value added. These sectors make up the group of larger industries identified *ex ante* by Buigues and Ilzkovitz (1990) as likely to be particularly sensitive to the SMP.[1] Additionally, since they performed a similar analysis for manufacturing as whole, they are also able to examine the effect of the SMP on the other manufacturing sectors. It is worth noting, however, that the requirements of the model in terms of the span of statistical series, as well as the disaggregation level, prevented them from carrying out the analysis for all the Member States. There are homogeneous and long enough available series only for France, Germany, Italy and the UK. Although this is an obvious limitation of the analysis, in aggregate terms, for the Community as a whole, the conclusions are representative enough, since these four countries make up the bulk of production and trade in the sectors listed on page 81.[2]

[1] The 40 sectors identified by Buigues et al. as particularly sensitive to the SMP represent around 50% of EU manufacturing value added. Therefore, the 15 sectors included in the study represent more than 70% of the value added accounted for by all sectors considered ex ante as most sensitive to the SMP.

[2] Since the sample of countries does not include certain countries such as Spain and Portugal, where trade has significantly increased since 1986, the SMP effects estimated by Allen et al. should be considered a lower bound rather than a representative average.

Therefore, the study focuses on the following 18 sectors:

Code	Sector
247	Glassware
248	Ceramics
251	Basic industrial chemicals
257	Pharmaceutical products
315	Boilermaking, etc.
322	Machine tools for metals
324	Machines for foodstuffs industries
325	Plant for mines
330	Office machines
344	Telecommunications equipment
345	Electronic equipment
351	Motor vehicles
364	Aerospace equipment
427	Brewing and malting
453	Clothing
	Total of 15 sectors
	Rest of manufacturing
	Total manufacturing

As mentioned in Section 2.2.1, each of these sector markets has three supply sources: domestic production, imports from other Member States (intra-EU imports) and imports from outside the EU (extra-EU imports). The study estimates the full SMP impact on the market shares supplied by each of these three sources. It also estimates how much of the SMP changes are due to falls in intra-EU import prices as a result of barrier removal (direct effect), and how much are due to increases in competition resulting from the SMP (pro-competitive effect).

The direct effect captures the contractionary impact of the SMP on transportation and administrative costs and the harmonization of standards to increase market access. In other words, the SMP reduces the prices of imported goods relative to their domestic price, thus increasing the market share of imports. The pro-competitive effect examines the impact of the SMP on price-cost margins. Lower mark-ups reduce domestic prices, increasing domestic market shares.

Box 2: Models to assess trade creation and trade diversion

The econometric model proposed by Allen, Gasiorek and Smith (1996) improves the traditional Winters' approach by complementing the almost ideal demand system (AIDS) with a structural model that takes account of the effects of the SMP on improved supply. Their approach to modelling supply is closest to that of Jacquemin and Sapir (1991) and examines the determination of domestic prices within an explicit oligopoly setting. The supply effects of the SMP can be thought of as taking two forms. First, the increase of competition will narrow the mark-up of price over marginal cost by domestic firms. Second, both increased competition and increased market size will allow for the greater exploitation of economies of scale, reducing costs margins. Empirical evidence of SMP competitive effects on domestic price setting can be obtained by including dummy variables in the price equations.

The combination of the AIDS model to investigate the SMP effects on demand and of an oligopoly model of price competition to assess the impact on price-cost margins, permits the identification of the overall effect of the SMP on trade flows and to distinguish the effects due to changes in import prices from the impacts due to changes in domestic prices. As suggested by Winters, direct impacts of the removal of non-tariff barriers on import prices are represented by a number of dummies entering the equations of the AIDS system. On the other hand, other dummies in the price equation representing the competitive impact of the SMP on price-cost margins, allow for the simulation of domestic prices, which incorporate the SMP effect. The substitution of these simulated series into the AIDS systems give the additional supply side effects on trade flows.

The CGE approach

Such a residual-based assessment is complemented with an analytical model of the economy, which includes the same SMP effects as the econometric model. The theoretical model underlying the CGE approach is based on imperfect competition and economies of scale. Each country is endowed with three primary factors of production (capital, which is perfectly mobile, and manual and non-manual labour, which are internationally immobile). The commodity structure is defined by NACE 3-digit industries with the rest of each economy aggregated into a single perfectly competitive composite, which is tradeable and which is taken as numeraire. The model is calibrated to 1991 data and then it is used to project the effect of the SMP.

The econometric model takes account of the theory but is essentially driven by the empirical data, while the CGE model takes account of empirical data but is driven by the theory. Such different approaches are, however, integrated in a common research strategy, since some results of the econometric modelling are incorporated in the CGE model. Nevertheless, because they are based on such different methodologies, one can not expect them to give the same answer, but the extent to which their answers diverge will give some sense of the extent of our true understanding of the nature of the SMP.

Although the econometric analysis covers only a limited range of sectors, and some of those are sectors where the CGE has had to operate at a more aggregated level because of data constraints, the comparison between both experiments permits the drawing of some robust conclusions:

1. Where intra-EU trade seems to have declined, the fall is likely to be largely the result of other economic forces, rather than perverse effects of the SMP.
2. Long run adjustment to the SMP in labour markets and through entry and exit of firms is already taking place.
3. The liberalization of external trade has been at least as strong as the intra-EU liberalizing effects of the SMP. It is therefore clear that concerns about 'fortress Europe' effects of the SMP were unnecessary: the SMP has clearly not closed the EU market to third countries, nor has it been accompanied by protectionist measures.

These estimates of the SMP impact on the three supply sources allow the study to quantify the overall impact of the SMP on trade creation and diversion by means of simulation techniques, taking account of both direct and pro-competitive effects. The overall impact is obtained by adding up these two effects. In order to obtain the market shares that would have prevailed in the *anti monde* (absence of SMP) Allen et al. (1996) rerun the model maintaining the estimated parameters but changing the dummies, which represent the policy change, and using the simulated values of domestic prices, which would have been observed had the pro-competitive effects of the SMP not taken place.

Actual changes of market shares between 1985 and 1995 for the four countries here considered suggest that the SMP has been trade-creating. For total manufacturing, the increase in intra-EU import market shares was almost 60% higher than the change in the part of domestic demand supplied by extra-EU imports. The share of intra-EU imports jumped from 16.9% in 1985 to 21.5% in 1995 (+4.6 points), whilst extra-EU import market shares increased by 2.9 percentage points (from 12.7% in 1985 to 15.6% in 1995). As for the EU as a whole,[1] this general conclusion holds regardless of the subperiod considered. The increase of intra-EU shares was 3.6 points over the period 1985/92 and 1.7 points over the period 1995/93, which compares with 0.7 and 1.0 points respectively for extra-EU import market shares.

The impact of the SMP on markets in the four countries is clearer when distinguishing amongst sectors on the basis of their sensitiveness to the SMP. Intra-EU import market shares grew by 7.9 percentage points in the 15 SMP-sensitive sectors between 1985 and 1995, against 3.1 for the rest of manufacturing sectors. Furthermore, between 1985 and 1992 intra-EU import shares in these 15 sectors grew by 5.9 percentage points, which compares with only 3.1 points for the rest of manufacturing. The corresponding figures for the period 1995/93 are respectively 2.8 and 1.1. Finally, sectoral data do not show any evidence of trade diversion. Extra-EU import shares grew by 1.5 points in the 15 sectors, but decreased by 0.2 points in the rest of manufacturing between 1985 and 1992. However, over the period 1993/95, extra-EU import shares only increased by 0.4 points in the 15 sectors, against 1.1 in the rest of manufacturing.

Allen, Gasiorek and Smith's parallel econometric assessment confirms that the SMP has indeed been trade-creating, and that there is little evidence of any substantial trade diversion of extra-EU trade. It is worth noting that quantitative figures displayed in their study should be treated with care, since the sample used to estimate the econometric models covers the period 1976-1994, and the impacts refer to the period 1992-94. Therefore, both parameter estimates and simulated impacts include the post-1993 Intrastat effect. As a consequence, actual changes under-value intra-EU import shares and over-value extra-EU market shares, whilst simulations show a clear bias towards over-estimation of impacts on intra-EU imports and under-estimation of impacts on extra-EU imports. However, once such biases are taken into account it seems clear that the SMP has been trade-creating, and that it almost fully explains the evolution observed in the part of the domestic demand supplied by intra-EU imports. Consequently, the SMP accounts for 80% of the increase recorded in total import market shares. On the other hand, when comparing the 15 large sectors particularly sensitive to the SMP with the rest of manufacturing, the study by Allen et. al. (1996) seems to reveal that the explanatory power of the SMP increases the higher is the sensitivity of sectors to the internal market measures. For instance, whilst in the 15 sectors the impact of the SMP would fully explain the observed changes in domestic shares, for the rest of manufacturing the overall impact of the SMP would account for around half the actual change.

Regarding competition effects, interesting differences can be distinguished between the sensitive sectors and other manufacturing sectors. The SMP has opened European markets as a whole to more intense competition, but this is especially true the higher the sensitivity of sectors to the SMP. Domestic producers in the 15 sectors particularly sensitive to the single market have reacted by lowering price-cost margins, leading to lower domestic prices and avoiding larger falls in domestic market shares. Allen, Gasiorek and Smith estimate that the average price-cost margin in this group has fallen by 3.9%. The SMP would have therefore induced domestic firms to reduce their prices and expand domestic production at the expense of both intra- and extra-EU imports. In other words, domestic market shares in the absence of pro-competitive effects would have fallen more than actually observed. Moreover, these competitive effects have been relatively larger with respect to EU competitors than against non-EU producers. Without such reductions in price-cost margins, domestic market shares would have been 0.8 percentage points less in favour of other EU producers and 0.4 points less against non-EU competitors over the period 1992/94. Finally, domestic producers in the rest of manufacturing would have maintained price-cost margins, which would have led to a 0.8 percentage points fall in domestic shares during that period, benefiting equally EU and non-EU competitors.

Last but not least, aggregate results provide some interesting and important conclusions about the access of non-EU producers to EU markets. Although the main thrust of the SMP was always to liberalize markets, there were bound to be

[1] See section 2.2.1 of this chapter.

Box 3: The impact of the SMP on conditions of access of third countries to the EU market. The cases of clothing and footwear

The study by Begg, Grimwade and Seccombe-Hett (1996) has explored the quantitative impact of the SMP on two sectors in which it has had a direct effect on the trade regime. The first, clothing, has seen a switch from, largely, Member State based quantitative restrictions (QRs) to a Community-wide restriction on certain major exporters to the EU. In footwear, the second sector examined, the change has been to abolish QRs, except for the imposition of a Community-wide restriction on China, the exporter with the third largest market share in 1990, but which is now the leading supplier. Other exporters now enjoy unfettered access. Both sectors are characterized by competitive, rather than oligopolistic market structures.

The main conclusion of the study is that, in both sectors, access for third countries has improved as the SMP has been implemented. This suggests that in other sectors in which similar changes in the trade regime occurred as a direct result of the SMP, the effect on access for extra-EU suppliers will also have been favourable.

The different empirical exercises undertaken in the course of this study all provide complementary evidence that the changes engendered by the SMP have led to an easing of restrictions:

(a) First, the analysis of trends in market shares produced clear evidence that the share of imports from partner countries and third countries alike had risen substantially in both sectors.

(b) Second, a detailed examination of quota utilization in the two sectors revealed that, as the '1992' deadline approached, non-EU producers seem to have taken advantage of the growing liberalization of the market to increase sales relative to quotas. Indeed, several quotas have regularly been exceeded.

(c) Simulations based on partial equilibrium models for the two sectors, showed that where the change is to complete liberalization, market access is greatly improved, but also that EU consumers benefit substantially. The simulations of a move to Community-wide QRs in place of national QRs produced little change in market access, but a significant redistribution between Member States. Member States which previously imposed the most restrictive QRs see the greatest increase in extra-EU imports but gain from lower prices.

More precisely the impact obtained in both sectors can be summarized as follows:

Clothing

The essence of the changes brought in for clothing by the SMP is that separate national quotas are replaced by a single Community-wide quota. Under the hypothesis that total EU imports are constant, imports from constrained countries are redistributed within the Community from the less restrictive Member States to the more restrictive ones. At the same time producers in previously more protected markets, lose while those in previously more open markets gain. Redistribution of imports between Member States occurs because non-EU suppliers aim to equalize their returns across markets. It therefore turns out that prices fall in the markets which were previously most restrictive and rise in the least restrictive ones. The EU as a whole benefits from this process, although the gains and losses are unevenly distributed both between Member States, and between consumers and producers.

Footwear

For footwear, although quotas have not been entirely removed, since certain imports of footwear from China are still subject to quota restraint, compared to the position prevailing in 1988, there has been a significant movement towards complete quota liberalization. In this case, the combination of import liberalization and completion of the SMP has a much greater impact. Prices fall in all Member States (by an unweighted average of 2.4%), while the volume of imports to the Community rises by 25%. Again, EU consumers benefit as a result, although European producers of footwear lose out. Exports from unconstrained countries fall by almost 10%, while European production falls by 3%. Again, there is a redistribution of supply between Member States.

concerns in third countries that access to the EU market would become more difficult as the single market was consolidated. There are three main routes by which the SMP might have made access more difficult: by diverting demand from third countries to partner countries; by creating a more dynamic EU economy such that European producers gain in competitiveness; and by translating national quantitative restrictions on imports (QRs) into Community barriers that restrain imports more effectively. The study by Allen et al. (1996) has dealt with the first two issues. Box 3 summarizes the main results of the study by Begg et al. (1996) on two study cases, clothing and footwear, assessing whether or not the move away from QRs imposed by Member States has altered market access.

The argument that the SMP has led to external liberalization towards non-EU producers, because market access is easier with a single system, is supported by the findings of Allen et al. (1996). The increase actually recorded in intra-EU trade has not at all been at the expense of trade with non-EU countries. Their estimates suggest that for total manufacturing the SMP explains around 70% of the actual increase in the part of domestic demand supplied by non-EU producers. Again, the impact of the SMP is larger the higher the sectoral sensitivity to the SMP. The SMP would explain almost 75% of the actual change in extra-EU import market shares, which contrasts with the performance of extra-EU imports in sectors less sensitive to the SMP, where the simulations yield an impact of around 60%.

As often emphasised in most *ex ante* studies on the effects of the SMP, the programme is expected to affect industries in different ways depending on the exact nature of the single market measures implemented and their interaction with the nature of competition within a particular industry. The study by Allen et al. (1996) provides sectoral evidence of the SMP's effects on the 15 sectors particularly sensitive to the SMP.

Leaving aside sectors where falls in market shares and mark-ups are relatively small (around 5% or lower), there are certain sectors (basic chemicals, pharmaceuticals, machine tools for

foodstuffs, office machines and aerospace) that have reacted to higher competitive pressures (reduced import prices) by reducing mark-ups, and others (machine tools for metals, electronic equipment and brewing and malting) where falls in price-cost margins are less significant. Clearly market structure and conduct differ between these two sets of sectors, though there is no evidence in the data available of systematic differences in concentration or in returns to scale between the two groups. Allen et al. (1996) conjecture that the existence of switching costs could explain why certain firms prefer to reduce prices to keep their market share. This is not implausible in any of the four sectors that have recorded the largest falls in price-cost margins. Switching costs, however may be less significant in the second group of industries where fixed price-cost margins may maximize profits, despite a consequent loss of market share.

A common characteristic of both sets of industries is that they are highly oligopolistic. In fact, these results differ considerably from the behaviour we would expect in a competitive industry, where an increase of competitive pressures would be reflected both in reductions in mark-ups and market shares. The behaviour of boilermaking and clothing provides interesting evidence of this. Both sectors could be included in the group of most competitive industries in the sample, as measured by concentration ratios.[1] In both cases, direct, negative, effects of the SMP on domestic market shares are accompanied by almost equivalent competitive effects on price-cost margins. As mentioned above, Box 3 presents additional evidence on clothing.

[1] See Chapter 5 in Allen, Gasiorek and Smith (1996).

4.2.3.2. Inter- versus intra-industry trade

The large increase in intra-industry trade, and the importance of intra-European trade in price-quality differentiated products are two phenomena which might be associated with SMP completion, but also with other features of the European economy, such as growth, convergence of countries, etc. Moreover, the single market might actually have had some effects which counteract the prevailing trends in European trade patterns. To examine these issues, the CEPII (1996) carried out econometric work with two purposes:

(a) to identify the factors determining European trade patterns, independently from the SMP completion;

(b) to isolate the SMP effect *ceteris paribus.*

In their models, the dependent variable is the share (as well as the value) of each country's bilateral two-way trade (in similar as well as in quality-price differentiated products) in intra-EU trade, by industry and for each year (1980-94) (see Box 4 on methodology).

Most determinants act in the same way on intra-industry trade in both types of product differentiation. They either increase or reduce their respective share of total bilateral trade. Among factors which increase the share of both types of intra-industry trade are market size, average per capita income of declaring

Box 4: Econometric methodology to explain the nature of bilateral intra-EC trade

The share (or value) of two-way trade in horizontally and/or vertically differentiated products in the bilateral intra-EC trade of each Member State, by industry, for each year (1980-94) is used as the dependent variable.

Explanatory variables combine country variables, market structures, and finally integration variables.

Country variables are those generally chosen in the literature, controlling for growth, size of countries (potential for economies of scale), purchasing power (demand for variety), comparative advantage, and transaction costs.

Turning to market structures, increasing returns are taken into account. Here, economies of scale have been proxied by the relative productivity of larger enterprises, in each industry. The differentiation of products is proxied by an original aggregated index of unit values dispersion based on calculations for each product.

Lastly, economic integration — which is the core of this research — is addressed first by variables taking values according to the levels of the non-tariff-barriers. The evolution of the parameter estimate before and after 1986 will allow for a quantification of the impact of the SEM on the composition of trade. Second, evolution over time of the parameter estimates associated with transaction costs enable us to capture the effect on trade of the cancellation of border formalities. Lastly, since private expectations of the SMP have led to large flows of foreign direct investment between European partners, this phenomenon has had a powerful influence on intra-European trade, which can be measured[1] keeping in mind the convergence hypothesis (leading to trade displacements) referred to above.

The large explanatory power of the model — higher than is traditionally found in the literature — is essentially due to the inclusion of multiple indexes, which is theoretically more appropriate, and which empirically greatly increases the number of observations. In contrast, using the same specification industry-by-industry, or country-by-country, leads to less satisfactory results, as expected.

[1] A dummy has also been used, quite unsuccessfully, as a measure of the impact of the SMP. Another dummy for Southern countries integration has been tested: the results were statistically significant but unable to disentangle SMP effects and the ones associated with integration to the EC.

and partner countries, returns to scale, foreign direct investment and the intensity of non-tariff barriers in intra-EU trade before the SMP. In contrast, factors which reduce the share of both types of intra-industry trade are transportation costs and currency depreciation.

Exchange rate movements within the EU not only reduce intra-industry trade, thus increasing inter-industry trade and adjustment costs, but the current multi-currency system in the EU introduces additional transaction costs, which represents a remaining barrier to trade and investment and prevents full

Box 5: The cost of multicurrency management — A remaining barrier to trade and investment

The existence of multiple currencies in the European Union creates transaction costs for exchanging currencies. These costs and risks influence trade and investment decisions and lower the Union's welfare. A study by the IFO institute provides new estimates of the transaction costs within the existing system of exchange rates in the European Union between 1986 and 1995. The study also assesses how the single market programme has affected these transaction costs.

Overall transaction costs are calculated by multiplying the total volume of foreign exchange transactions in the EU with the costs associated with the different types of transactions. The study shows that foreign exchange management costs within the EU amounted to almost 1% of EU 12 GDP in 1995. This figure has remained quite stable over the period 1986/95, and exceeds the previous EC estimate of 0.4% (see One market, one money). The difference can be explained by the use of more up-to-date statistical material and the methodology applied. In the present study, the *anti monde* is the EU without the SMP, whereas that of the study 'One market, one money' was the EU without a currency union.

Transaction costs are substantially lower for inter-bank business. Between 1986 and 1995 bid-ask spreads for interbank trade of EU currencies and important third party currencies (US dollar and the Japanese yen) have declined strongly for all noted currency pairs, especially for the DM. Transactions using the US dollar as a vehicle currency have become cheaper, but not to the same degree as when using one of the three most important EU currencies (German mark, British pound, French franc) as vehicle currencies. There are substantial differences in the unit costs of exchanging small or large sums. This is true for inter-bank transactions as for transactions of non-bank business for current account and capital account. There has also been a significant change in the size structure of costs between 1986 and 1995. The relative costs of exchanging large sums have decreased substantially. The cost differences are largely dictated by the different size structure of transactions. Overall, unit costs have been declining significantly since 1986.

The study identifies two main determinants of the evolution of transaction costs: On the one hand, intra-EU transaction volumes have increased substantially because of increasing market integration in the European Union. Given constant unit costs of transactions, this positive integration effect would result in a rise of total transaction costs. All other things being equal, the more effective the SMP turns out, the larger the rise in transaction costs. On the other hand, it is found that unit costs have declined over this time period. It is argued that capital market deregulation and the free movement of capital ushered in by the SMP has decreased bank charges substantially. The decline in unit costs will, *ceteris paribus*, decrease total transaction costs. The effects of the SMP on total transaction costs, therefore, seem to have cancelled each other out to a certain degree. This is a reason for the relative constancy of the ratio of transaction costs to GDP in the EU between 1986 and 1995.

The study tries to single out the effect of the SMP on unit costs. The hypotheses tested in this analysis are, firstly, that the single market programme of deregulating capital markets is not instantaneous and that a high level of capital market imperfection and high costs of banking services in the late 1980s continue to have a belated, persistent effect on bank charges in 1994; secondly, it is expected that where *ex ante* imperfection levels were high, the impact of the single market on bank charges was strongest. Thus, inter-country patterns of cost declines should be largely determined by differences in the degree of previous capital market imperfections and by the speed in which they were eliminated. It is assumed that in a world without the single market programme's first and second Directives for coordinating banking law and the Directive for the complete liberalization of capital movements no such cost declines would have occurred. The important second banking Directive of 1989 set out the principle of the right of banks to trade financial services and to establish branches throughout the EU, on the basis of a single authorization or 'licence' from their home country supervisor. The Directive liberalizing capital movements of 1988 was of outstanding importance because it required the dismantling of all barriers to capital movements in the EU.

In the study regressions are run of the different types of unit costs against the volume of enterprises' foreign trade and the direction of trade (i.e. the share of EU trade), as well as other variables. The most noteworthy result concerns the size of the estimated elasticity of bank charges to the volume of a firm's total foreign trade. In the two countries where capital market liberalization and deregulation are strongest, in Germany and the UK, this elasticity has a substantially higher absolute value than that found in the three other countries analysed. The estimated elasticity of –.2 indicates that with a 10% increase in the volume of foreign transactions a firm's unit bank charges for exchanging currencies falls by 2%. This implies that in the more competitive markets in Germany and the UK, large firms have greater cost advantages than in Italy or France. The larger elasticity in the first two countries is corroborated by the finding that a significant number of German and UK firms (and among them especially the smaller firms) stated their costs had increased. This could well be the case in a banking environment where large firms can demand low charges and banks raise charges on small and middle-sized firms in order to cover costs or maintain profit margins. The picture is less clear for intra-EU trade: On the one hand, the coefficients to the EU trade or EU export share variables are all negative, indicating that intra-EU trade involves foreign exchange transactions with lower costs than trade with other countries. On the other, the coefficients are either not significantly different from zero or only marginally significant. The size of the coefficient is highest in Germany, which means that among German firms there are cost benefits to be found in EU trade. For a small number of UK firms the coefficients are even higher. A very preliminary interpretation of these results could be that in these two countries the degree of competition among banks for intra-EU business is more intense than the competition for business with the rest of the world.

Table 9

Synthesis of econometric results for intra-EU trade patterns

		Effect on the share of intra-industry trade in total, bilateral trade	
		Similar products	Products differentiated price-quality
General determinants			
Market size		+	+
Income per capita		+	+
Returns to scale		+	+
Foreign direct investment		+	+
Non-tariff barriers before the SMP		+	+
Transportation costs		–	–
Exchange rate variations		–	–
Differences in market size		–	
Differences in factor endowments		–	+
Vertical differentiation of products		–	+
Single market related effects			
Measures	General effects		
Cancellation of border formalities	Reduced transaction costs	+	+
(EMU)	Currency depreciation	–	–
Completion of the SMP	Microeconomic adjustment growth	+	+
Structural funds	Convergence of GDP	–	+
Variation over 1980-94		+	+

exploitation of the advantages of the internal market. As shown in Box 5, the study conducted by the IFO institute (1996) reveals that such transaction costs are far from negligible and amount to around 1% of the EU 12 GDP.

Having identified these determinants of intra-EU trade patterns, they can be controlled in order to address the question of an *anti monde*: How might trade patterns have evolved without completion of the SMP? There is clear econometric evidence that the cancellation of border formalities has directly led to an increased share of intra-industry trade. However, the empirical evidence on the nature of intra-EU trade is the result of complex relationships, influencing trade types with different intensities. A key feature of the evolution of intra-industry trade in Europe during the completion period has been the expansion of two-way trade in differentiated products, even if this evolution might not only be the result of the SMP *per se*, exogenous factors having played an important role. Table 9 tries to distinguish specifically SMP-related factors having an effect on intra-industry trade from more general factors which would also have had an effect as the SMP was progressing (and which would have had an effect in the absence of the SMP).

4.3. Foreign direct investment (FDI)

4.3.1. Expected theoretical impact of FDI

Foreign direct investment (FDI) can take the form of 'greenfield' investment (establishing a new company from scratch) and cross-border mergers and acquisitions of existing firms. Trade and FDI are different ways of supplying international markets. Multinational companies are the main source of FDI flows, and the sales of multinational foreign affiliates are now by some estimates worth double the value of world exports.

Until recently, most research on FDI[1] has been conducted within the theoretical framework developed by Dunning (1977, 1981). This theory seeks to explain under what conditions a firm will engage in FDI abroad rather than serve foreign markets via exports or some other means, such as licensing. It argues that multinational enterprises must possess some advantage over local firms which overcomes the inherent disadvantages and additional costs[2] of producing in another country.

Broadly, this advantage will hold when three conditions are fulfilled (Dunning 1993): the multinational possesses ownership specific advantages (O), it has certain internalization opportunities (I) and the foreign market has locational advantages (L). Ownership advantages which give an MNE cost advantages over local rivals in the foreign market can be due to the product it makes or its characteristic production process, or to intangible reasons such as reputation for quality, brand name, and superior management. Locational advantages can include trade barriers, both natural (transport costs) and artificial (tariffs and quotas), cheap factors of production, and ease of access to consumers. Internalization advantages are factors which make it more profitable for an MNE to set up a foreign subsidiary itself rather than exploit ownership and locational advantages in other ways such as licensing a foreign firm to produce the product.

Clearly, the SMP will only directly affect locational advantages. The net effect is however ambiguous. To the extent that the SMP is expected to raise income levels and growth in the EU, FDI will be increased. To the extent that trade becomes easier and plant-level economies of scale are available, FDI may no longer be necessary to access markets and will consequently contract.

Over time, these OLI concepts have been refined. Concerning ownership advantages in particular, it is now held that knowledge-based assets are more important than physical capital assets in determining whether or not FDI takes place (Markusen, 1995). This is because knowledge-based assets are easily transferred back and forth between different locations (in different countries) at little cost (which gives them the properties of public goods), unlike physical capital. Knowledge-based assets therefore provide firms with cost advantages over independent single plant firms.[3] Conversely, potential economies of scale arising from concentrating production at a single plant tend to discourage FDI and geographically dispersed production. The implication is that in sectors subject to economies of scale, the SMP will lead to relatively more trade than FDI.[4] For sectors characterized by knowledge-based assets, however, FDI will increase relative to trade to Member States whose locational advantages are significantly improved by the SMP (because of the removal of market fragmentation and the dynamic impacts on economic growth and prosperity).[5]

Locational advantages certainly seemed to have been affected by earlier Community regional integration developments. Early research on EC integration and FDI emphasized that the formation of the European customs union led to 'tariff jumping' by means of FDI into the Community, implying that the process of integration enhanced the locational advantages of the countries hitherto served by exports from the United States or other non-EU countries, thus leading to a surge of FDI. This is particularly true for non-European firms (Balasubramanyam and Greenaway, 1991), with direct investment providing a means of gaining tariff-free access to the European-wide market.

Recently, a (currently) small body of literature (called the New theory of FDI) has evolved which takes the key concepts of ownership and locational advantages from the OLI literature and introduces them into general equilibrium trade models. Initially, this theory explained the decision to expand via investment overseas in terms of differences in the costs of factors of production due to relative factor endowments which vary across countries (Helpman (1984), Markusen (1984), Helpman and Krugman (1985)). In this case, MNEs arise to exploit these differences in factor costs by expanding vertically abroad — i.e., headquarters are located in capital-abundant countries, whilst production is located in labour-abundant countries.

Thus, if factor endowments across countries are similar, their respective factor prices will not diverge much either, and there will be no motivation for multinational activity. This approach

[1] We take FDI to be a proxy for international production (as there is no adequate information on production or sales). Following the IMF definition, FDI refers to investments made to acquire a lasting interest in an enterprise operating in an economy other than that of the investor, the investor's purpose being to to have an effective voice in the management of the enterprise.

[2] Which include communication costs, expatriate conditions for relocating company personnel abroad, resources used up in overcoming language barriers and differing local customs, as well as the costs of being outside local business and government networks (Markusen, 1995)

[3] Consider R&D, clearly a knowledge-based asset; a single two-plant firm has a cost efficiency advantage over two independent single-plant firms because the multiplant firm (the MNE) need only make a single investment in R&D spread over two plants, whilst the two independent firms must each make the R&D investment.

[4] Except, perhaps, in the short-run when FDI is used to concentrate production inside the Community to exploit economies of scale.

[5] In principle, all Member States' locational advantages will be enhanced by the SMP, but for some, other factors may conspire to reduce the positive impact of the SMP.

therefore suggests that we should expect to see FDI flowing between countries with substantially different relative factor proportions and in a single direction; typically from rich capital intensive countries to poor labour-abundant countries.

Most recently, models have been produced allowing for horizontal multinationals and two-way investment between countries (Brainard (1993), Markusen and Venables (1995)). The key elements of these models are plant and firm level scale economies, tariffs and transport costs. Firms will undertake FDI the higher are firm level fixed costs and trade costs relative to the benefits of locating all production at a single plant, due to plant level scale economies.

- A principal contribution of these latest models is that they can show which country characteristics are associated with high levels of FDI. Their key propositions are (Markusen and Venables (1995)):

- MNE activity will tend to become more intensive as countries converge in size and relative endowments;

- MNEs displace trade. Trade costs tend to favour FDI over exporting;[1]

- sectors in which firm level economies of scale are important will tend to be dominated by MNEs relative to sectors in which plant level scale economies are crucial.

4.3.2. Overall picture of the pattern of FDI in the EU

As Chapter 2 already highlights, stocks of foreign direct investment (FDI) around the world have grown in value from USD 68 billion in 1960 to USD1 650 billion in 1993, four times faster than global GDP and three times faster than global trade in the same period. This enormous increase has been particularly intense in the most recent period — worldwide FDI flows grew almost five-fold between 1984 and 1990 (before contracting some 36% in 1991). Multinational enterprises (MNEs) are the main source of FDI flows, and the number of MNEs around the world has risen from around 7 000 in the late 1960s to about 37 000 in the early 1990s. As a result, the sales of MNE foreign affiliates are now, by some estimates, worth double the value of world exports. Clearly, foreign affiliates have taken over from exports as the main way in which MNEs supply markets around the world with goods and services. FDI can take a variety of forms, including both 'greenfield' investment (establishing a new company or factory from scratch) and mergers and acquisitions of existing firms (M&As). Furthermore, as trade and FDI are different ways of supplying international markets, FDI has to be studied with at least as much interest as international trade, especially to investigate the extent to which the two substitute for or complement each other.

Table 10

Share of FDI inflows (%) from all countries

	1982-87	1988-90	1991-93
Developed countries	78.1	84.6	67.0
Developing countries	21.9	15.3	33.0
European Union	28.2	42.3	44.4
as % of developed	36.1	50.0	66.3
United States	39.9	31.3	10.2
Japan	0.7		0.9

Source: Based on Unctad 1994 and IMF data.

Even more importantly as far the EU is concerned, as a target for FDI it has disproportionately enjoyed the FDI surge, with a seven-fold increase in flows in the 1984-90 period, implying a growing share of the worldwide total. Table 10 shows how its share climbed throughout the 1980s and up to 1993 from just over a quarter to over 44% of world-wide flows (or two thirds of FDI inflows to developed countries, up from only 36% in the period 1982-87). The EU's success contrasts with the United States' experience, where the share of world-wide FDI flows hit a low of 10.2% in the period 1991-93. Japan provides another contrast, as its share of worldwide FDI flows have consistently been virtually negligible.

In 1993, the EU Member States attracted almost ECU 52 billion of FDI (from outside the EU and from each other), down from ECU 61 billion in 1992, and the peak of ECU 72 billion in 1990. Nevertheless, the 1993 total remains considerably higher than the ECU 17.5 billion attracted in 1986. Concerning the source of these flows, Table 11 shows that investments by Member States in other Member States (intra-EU FDI) increased as a proportion from 41% of total FDI flows to the EU in 1984, to 55% in 1986-90 and over 60% in 1991-93. In other words, the EU has accounted for an increasing share of a rising total of FDI. Outside the EU, the major sources of foreign investment have been the US and EFTA, which together provided 44% of FDI flows in 1984, falling to 29% in 1990 and then 24% in 1993. One result of this was that the EU's share of US foreign affiliates' total assets rose to nearly 50% in the early 1990s. Following a dip during the recession of the early 1980s, this surpassed previous levels

[1] However, to the extent that the SMP removes barriers and consequently lowers trade costs, the SMP may tend to increase trade relative to FDI within the EU. This is particularly true in sectors where there are large, unexploited economies of scale.

Table 11

EU FDI inflows from all countries

Value (million ecus)

	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993
Intra-EU	4 213	5 949	10 449	12 344	22 317	34 485	39 295	34 904	38 373	30 844
Extra-EU	6 152	5 711	7 119	12 991	18 141	27 943	32 753	20 993	22 551	21 029
Intra + extra	10 365	11 660	17 568	25 335	40 458	62 428	72 048	55 897	60 924	51 873

Share of extra-EU FDI inflows from all countries

	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993
Extra-EU (% total)	59%	49%	41%	51%	45%	45%	45%	38%	37%	41%
US	28%	15%	15%	9%	6%	16%	13%	10%	19%	17%
Japan	4%	6%	3%	6%	6%	7%	8%	3%	3%	3%
EFTA	16%	16%	19%	15%	21%	13%	16%	12%	7%	7%

Source: Eurostat and Commission Services.

and reflected an increased concentration of US MNE activity in Europe. Japanese FDI to the EU has, meanwhile, oscillated since 1984 between 3 and 8% of the EU total. There was a notable decline in the Japanese share during the period 1991-93 to 3% from 8% in 1990.

The importance of FDI stocks to the EU as a share of GDP has risen significantly. Table 12 demonstrates that while the ratio of FDI inward stock to GDP since 1980 has generally grown world-wide, the European Union's has grown even faster, most markedly in the period 1985 to 1990, and remains higher than for most developed countries. That underlines the important role which FDI plays in the EU economy, in contrast to both the United States and in particular Japan, and means that FDI is probably having more pronounced effects on the EU economy than on other economies around the world, especially developed countries.

Table 12

Significance of FDI inward stock to GDP

	1980	1985	1990	1992
Developed countries	4.7	6.4	8.4	8.2
Developing countries	5.2	9.2	5.5	9.2
European Union	5.8	8.7	11.3	11.5
Rest of W. Europe	4.7	6.4	7.7	8.3
United States	3.2	4.7	7.3	7.1
Japan	3.0	2.5	2.6	1.1

Source: Based on Unctad 1994 and IMF data.

4.3.2.1. Country dimensions

At the Member State level, Table 13 shows that the most noticeable changes in shares of total FDI inflows to the EU are the strengthened positions of Belgium/Luxembourg especially and, to a lesser extent, France. Conversely the UK position declined in the period 1990-93. Generalizing, the main Member State recipients of FDI flows between 1990 and 1993 were the UK first with around 23% of the total, then France (15%), Belgium/Luxembourg (14%) and Spain (12%). At the other extreme, Greece barely received 1% of such flows, whilst Denmark and Portugal received only about 2% each.

The UK's overall dominance as a location of FDI is partly because it is a large Member State with a consequently larger domestic market (just as the apparently low share of Greece, Portugal and Denmark can be partially attributed to their being relatively small Member States). However, it may be, as is sometimes argued, that the UK's dominance is also partly due to other factors — cultural, geographic, linguistic and structural — which make it relatively more attractive than other Member States as a location for FDI, especially from outside the EU — primarily from US and Japanese MNEs. In the period 1986 to 1992, the UK consistently received over 40% of extra-EU FDI flows targeting the EU (apart from just one year, 1991, when its share fell to 27%). This dominant position in terms of attracting FDI from outside the EU means that the UK remains one of the

Table 13

Member States' share of FDI inflows, 1986-93

	Share of average intra-EU FDI flows to			Share of average extra-EU EU inflows of FDI to:			Share of total FDI flows to the EU going to:		
	1986	1993	1990-93	1986	1993	1990-93	1986	1993	1990-93
BLEU	7%	19%	17%	2%	16%	9%	5%	17%	14%
Denmark	0%	1%	1%	2%	4%	2%	1%	2%	2%
Germany	9%	7%	11%	3%	7%	5%	7%	7%	8%
Greece	1%	1%	1%	3%	0%	0%	2%	1%	1%
Spain	17%	13%	14%	15%	9%	9%	16%	11%	12%
France	14%	18%	15%	19%	14%	16%	16%	16%	15%
Ireland	1%	6%	7%	0%	6%	4%	0%	6%	6%
Italy	7%	7%	5%	-6%	7%	7%	2%	7%	6%
Netherlands	18%	16%	12%	13%	4%	10%	16%	11%	11%
Portugal	1%	2%	3%	1%	1%	2%	1%	2%	2%
UK	25%	9%	14%	47%	34%	37%	34%	19%	23%
Total	100%	100%	100%	100%	100%	100%	100%	100%	100%
Share of extra-EU flows to total				41%	41%	40%			

Source: Eurostat.

main Member State locations for overall FDI within the EU. France also receives significant extra-EU FDI inflows, but trails the UK, generally receiving a 10-20% share of the extra-EU total.

As hosts for FDI from other European Union countries, Belgium/Luxembourg and France feature prominently, each absorbing some 18% of intra-EU FDI in the period 1992-93.[1] Meanwhile, the UK absorbed less than 10% of intra-EU FDI flows in the same period, having become significantly less important as a location for FDI from other Member States over the period 1986-91.

As Table 14 shows, the impact on the domestic economy in terms of the ratio of FDI inflows to GDP differs widely amongst Member States and gives a markedly different picture from the simple analysis of the magnitude of inflows and their destination. In the period 1990-93, annual Irish FDI inflows were worth over 9% of GDP. For Belgium/Luxembourg, the ratio was nearly 5% a year. The Netherlands, with a ratio nearing 3%, came third, then Portugal (2.6% p.a.), the UK (over 1.8% p.a.), and Spain (with almost 1.8%). Least affected as judged using this measure are Germany (less than 0.4%), Italy (0.4% p.a.) and Greece (0.6%).

Table 14

Significance of the EU's inflows to GDP by Member State, 1986-93

Ratio of total FDI to GDP			
	1986	1993	1990-93
BLEU	0.75%	4.79%	4.70%
Denmark	0.23%	1.04%	0.89%
Germany	0.13%	0.22%	0.37%
Greece	0.86%	0.56%	0.64%
Spain	1.20%	1.32%	1.75%
France	0.38%	0.78%	0.89%
Ireland	0.25%	7.68%	9.41%
Italy	0.05%	0.40%	0.40%
Netherlands	1.54%	2.18%	2.74%
Portugal	0.65%	1.47%	2.64%
UK	1.04%	1.29%	1.83%
EU-12	0.49%	0.94%	1.17%

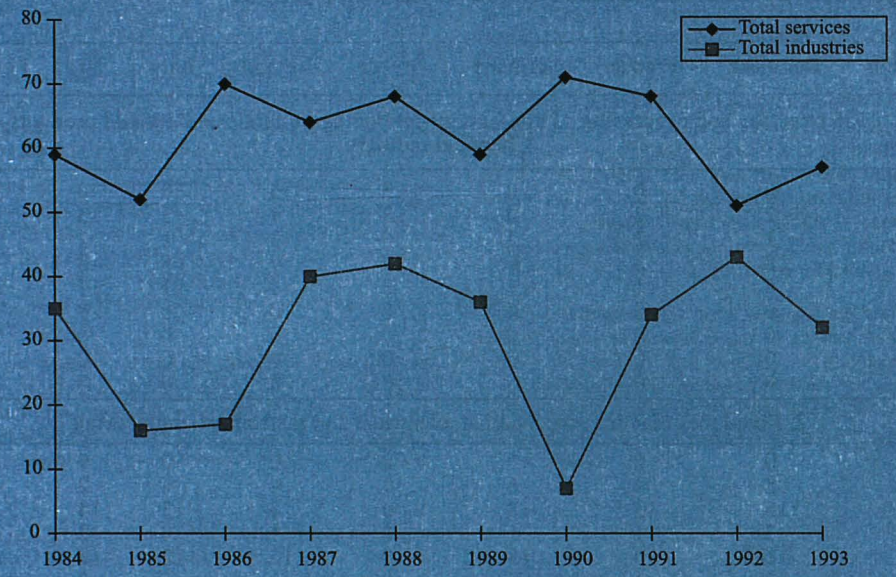
Source: Eurostat and Commission services.

4.3.2.2. Sectoral dimension

The bulk of FDI to the EU as a whole is targeted at the services sector (see Figure 6 below). From 1984 to 1993, 63% of cumulative FDI inflows went to service sectors whilst only 31% went to manufacturing sectors. This partially reflects the dominance of service sectors in all advanced economies. However, as services are generally less tradeable than

[1] However, the former may be slightly exaggerated as a result of the presence of holding companies or financial affiliates of firms from other European Union countries.

GRAPH 6: **Share of annual FDI inflows received by the EU in selected sectors, 1984-93**



Source: Eurostat.

Table 15

Comparison between share of intra-EU FDI and trade by broad industrial sector, 1984-92

(%)

	1984-86[1]		1987-89		1990-92	
	FDI	Trade	FDI	Trade	FDI	Trade
More technology intensive	*73.0*	*59.9*	*47.0*	*61.3*	*50.6*	*62.1*
Chemicals	30.8	18.4	28.4	16.6	9.9	15.9
Non-electrical machinery	15.7	10.6	3.2	11.4	10.1	11.1
Electrical and electronic	18.4	14.8	13.3	15.4	15.3	15.6
Transport equipment	8.1	16.1	2.1	18.0	15.3	19.5
Less technology intensive	*26.9*	*40.1*	*43.0*	*38.7*	*49.5*	*37.9*
Food products	9.6	12.5	22.7	11.3	27.2	10.8
Metal and metal products	0.7	3.6	6.4	3.8	3.5	4.1
Other industries	16.5	23.9	23.9	23.7	18.8	23.1
All industries	*100.0*	*100.0*	*100.0*	*100.0*	*100.0*	*100.0*
ECUs (billion)	*1.33*	*319.9*	*6.67*	*424.2*	*9.02*	*547.2*

[1] Annual average. Intra-EC FDI is defined as inward investment flows into all Member States of the EC from other Member States of the EC; and intra-EC trade as value of exports between members of the Community.

Source: Eurostat (1994).

Table 16

Numbers of M&A operations by sector and Member State over the period 1986-95

NACE	Belgium	Denmark	France	Germany	Greece	Ireland	Italy	NL	Portugal	Spain	UK
2. Extraction and processing of non-energy-producing minerals and derived products Chemical industry											
21	0	0	0	0	3	4	0	0	3	1	1
22	5	2	2	4	3	1	3	3	4	3	2
23	1	1	2	2	0	3	1	1	1	1	0
24	9	8	5	6	17	7	5	10	11	7	4
25	12	8	11	11	3	9	21	11	14	14	12
26	0	0	0	0	0	0	0	0	0	0	0
27	0	0	0	0	0	0	0	0	0	0	0
28	0	0	0	0	0	0	0	0	0	0	0
29	0	0	0	0	0	0	0	0	0	0	0
3. Metal manufacture; mechanical, electrical and instrument engineering											
30	0	0	0	0	0	0	0	0	0	0	0
31	4	8	4	6	0	4	4	2	3	4	4
32	13	18	13	18	0	4	13	14	3	7	13
33	0	3	1	1	0	1	0	2	0	0	3
34	7	11	10	13	0	12	12	10	14	10	13
35	2	2	4	3	0	1	5	2	1	4	4
36	3	1	2	2	10	1	2	2	0	1	3
37	2	2	4	4	0	0	2	2	0	1	4
38	0	0	0	0	0	0	0	0	0	0	0
39	0	0	0	0	0	0	0	0	0	0	0
4. Other manufacturing industries											
40	0	0	0	0	0	0	0	0	0	0	0
41	7	9	5	4	3	16	6	12	11	11	5
42	8	7	7	4	38	7	8	8	11	11	5
43	3	1	3	3	7	3	1	3	6	2	1
44	0	0	0	0	0	0	1	0	0	0	0
45	2	1	4	2	0	3	3	1	1	2	1
46	3	4	3	3	0	1	1	5	6	2	2
47	13	9	10	7	10	10	7	8	8	12	15
48	6	3	7	6	3	7	6	5	1	4	6
49	1	1	2	1	0	1	1	1	1	1	1

Source: AMdata.

manufacturing goods, FDI is often the only way to supply foreign markets. This reinforces the dominance of services' FDI relative to manufacturing FDI. As for the manufacturing sectors receiving FDI in the EU, a broad general characteristic has been the growing importance of less technology intensive sectors in the recent period, a development which is the reverse of recent trends in trade (see Table 15).

Data constraints (see Box 6) make it difficult to obtain more detailed evidence on the sectoral breakdown of manufacturing FDI, especially to individual Member States. However, there is detailed data on mergers and acquisitions (M&As) available, and although this ignores greenfield investments, it can, nevertheless, provide interesting information about the bulk of FDI. Table 16 shows the breakdown of M&A activity (by numbers of operations) in NACE 2-digit manufacturing sectors for the period 1986-95 by Member State. Of course, the data suffers the serious shortcoming of treating all operations as equally important, even though they may differ greatly in value. Nevertheless, from the table we can see interesting Member State differences in the sectors attracting most M&A activities. For example, NACE sector 32, mechanical engineering, has apparently been either the first or second most popular sector as a target for M&A (in terms of numbers) in the generally more developed Member States. Conversely, NACE-42 and 43, textiles and clothing, has only been an especially popular target for M&A activity in the less developed Member States.

Box 6: FDI data availability

There is a significant lack of comprehensive statistical data on FDI. Eurostat has collated data on FDI flows within the EU, but these data are not available prior to 1984 and there are numerous country and sectoral gaps. Moreover, use of flow data rather than stock data on FDI can lead to inaccurate conclusions since flows often vary widely between years, reinvested profits are not included[1] and there remain differences in the ways that different countries record FDI flows that the Eurostat harmonization process has yet to resolve.

However, mergers and acquisitions (M&As) are an increasingly important phenomenon of the globalizing economy, and their rapid growth in the late 1980s coincides with the implementation of the internal market. Over the period 1987-93, worldwide cross-border M&As were around two thirds (66.2%) of FDI inflows into developed countries.[2] It is legitimate, therefore, to take data on M&As as a reasonable proxy for FDI.

Furthermore, data on M&As (from the AMdata database) is relatively rich, and quite sectorally disaggregated. Another advantage is that it includes acquisitions financed by locally-raised capital that would not normally appear in the balance of payments, even though the consequent change of ownership would qualify as FDI under the conventional definition.[3] On the other hand, M&A data is only complete for numbers of M&A, not for value. In fact, a significant number of the transactions on the AMdata database are not recorded with values attached, particularly where the target is a continental European firm. Another problem with using M&A data as a proxy for FDI is that it ignores greenfield investment.

The problem with using data on number of operations alone is that it implies assigning equal values to M&A operations which may have been significantly different in terms of their monetary value. On the other hand, AMdata only records large-scale M&A activity, which may reduce the scale of the problem somewhat. Furthermore, value data could also introduce a bias — capital-intensive industries would dominate M&A activity, whilst interesting activity occuring in non capital-intensive sectors may be overlooked.

Finally, as regards the issue of neglected greenfield investment, it is not obvious why such activity should have a different sectoral composition to M&A activity — in other words, although not comprehensive, AMdata is adequate for sectoral analysis. In any case, Eurostat data does allow some generalizations to be made about the value of FDI and the sectors to which it has been directed in the Member States.

[1] Until very recently. These can form a significant part of FDI, particularly for the more mature investments of, for example, US firms.

[2] Unctad 1995. This phenomenon is discussed in more detail in Chapter 11.

[3] IMF see Chapter 3.

4.3.2.3. FDI and the exploitation of relative comparative advantage

From a view of the sectoral breakdown of FDI (as proxied by M&A) within the Community, it is but a short step to consideration of whether or not FDI flows reflect Member States' relative comparative advantages. Theory, as we have seen, suggests that at least some FDI should indeed do so, even if the bulk of FDI will be between rich countries with similar factor endowments.

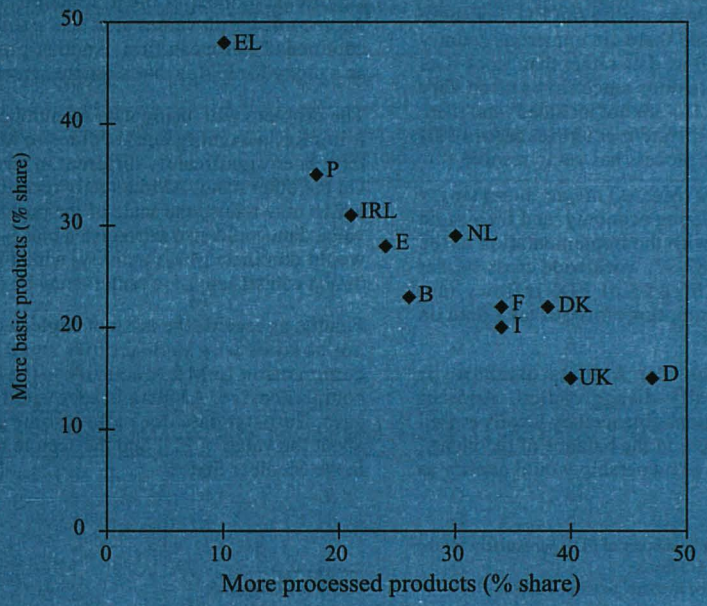
The information on M&A activity provided in Table 16 above is used to make such an analysis. Two approaches are used. Firstly, the *ad hoc* assumption is made that NACE 2-digit sectors 32 to 37 (mechanical engineering, office machinery, electrical engineering, motor vehicles, other means of transport and instrument engineering) could be described as more processed products, whilst NACE sectors 41 to 46 (food, drink and tobacco, textiles, leather goods, clothing and footwear, and timber and wooden furniture) could be described as relatively basic products. On this basis, the share of M&A activity in each Member State's total M&A activity over the period 1986-95 was calculated. The result is presented below in Figure 7, and provides interesting evidence suggesting that FDI activity is indeed related to Member States' comparative advantages.

The second, slightly less ad hoc approach is to calculate the similarity of the M&A activity between the Member States for manufacturing sectors with a correlation coefficient, as we have done for production and trade. This matrix of correlation on inflows FDI is presented below in Table 17. The closer to 1 is an index, the more similar the FDI activity in the two Member States under comparison as represented by numbers of M&A, and vice versa. This index has been calculated at the NACE 2-digit level which is highly aggregated and therefore loses significant details. What is clear from the table is that the 'northern' Member States are very similar to each other — i.e., the intensity of M&A activity in particular sectors has been much the same amongst the northern Member States. A distinction can be drawn between the northern Member States and most of the southern Member States apart from Spain (which according to this analysis is very similar to the northern Member States). These results may well reflect factor endowment differences and so be based on investors' perceptions of comparative advantage.

4.3.2.4. FDI/trade relationships

FDI and trade are alternative ways of supplying foreign markets. This, plus the fact that theory (as we have seen) does not generate very definite conclusions about the likely SMP impact to be drawn, makes it interesting to see how their relationship to each other has developed during the SMP period, and so obtain empirical evidence as to whether they have complemented or substituted for each other. Table 18 compares intra-EU FDI/trade ratios by broad industrial sector. Clearly, the trade/FDI ratios have fallen substantially during the

GRAPH 7: **M&A activity in the Member States (1986-96) — sectors targeted**



Source: AMdata.

Table 17

Correlation matrix on inflows FDI, 1986-95

	B	DK	D	EL	E	F	IRL	I	NL	P	UK
B	1	0.875	0.927	0.837	0.452	0.749	0.849	0.920	0.764	0.916	0.889
DK	0.875	1	0.892	0.925	0.241	0.707	0.779	0.923	0.664	0.793	0.870
D	0.927	0.892	1	0.926	0.283	0.730	0.910	0.888	0.711	0.871	0.955
EL	0.837	0.925	0.926	1	0.092	0.589	0.862	0.856	0.592	0.720	0.886
E	0.452	0.241	0.283	0.092	1	0.363	0.231	0.369	0.502	0.493	0.214
F	0.749	0.707	0.730	0.589	0.363	1	0.667	0.822	0.846	0.887	0.700
IRL	0.849	0.779	0.910	0.862	0.231	0.667	1	0.821	0.737	0.867	0.864
I	0.920	0.923	0.888	0.856	0.369	0.822	0.821	1	0.825	0.889	0.829
NL	0.764	0.664	0.711	0.592	0.502	0.846	0.737	0.825	1	0.899	0.662
P	0.916	0.793	0.871	0.720	0.493	0.887	0.867	0.889	0.899	1	0.846
UK	0.889	0.870	0.955	0.886	0.214	0.700	0.864	0.829	0.662	0.846	1
Average	0.818	0.767	0.809	0.729	0.324	0.706	0.759	0.814	0.720	0.818	0.772

Source: AMDATA.

Table 18

Intra-EU trade/FDI ratios 1984-92

	1984-86	1987-89	1990-92
More technology intensive	*196.4*	*82.9*	*74.4*
Chemicals	142.7	37.1	97.2
Non-electrical machinery	160.8	325.5	66.5
Electrical and electronics	192.9	73.8	61.9
Transport equipment	478.1	540.3	77.5
Less technology intensive	*355.6*	*46.4*	*46.6*
Food products	312.2	31.5	24.1
Metal and metal products	1047.2	37.7	69.0
Other industries	346.5	62.9	74.6
All industries	*239.5*	*63.5*	*60.7*

Source: Eurostat (1994).

period of the single market to a quarter of their previous levels. The decline in this ratio was generally most marked in the less technology intensive sectors, and in the early SMP implementation period (1987-89) when flows of FDI peaked.

CEPS (1996) carry out a series of tests with the explicit aim of empirically testing the relationship between trade and FDI. In particular, they investigate whether changes in FDI outflows from one country to another lead to subsequent changes in exports between the two. In theory, increases in FDI should precede declines in exports. However, they find little support for the hypothesis that there are strong causal links between FDI and exports. It does not seem from the evidence that increases in FDI outflows by EU Member States have led to export declines, nor that increases in exports have led to declines in FDI. At most, there is some very weak evidence that exports and FDI may actually be positively related — in other words, that they complement each other. In particular, increases in FDI lead after a lag to increases in exports.

4.3.3. Assessment of the single market effect

The single market and levels of intra-EU FDI

The first indication of the extent and direction of the SMP impact on FDI in the EU is provided in section 3.2 where the increasing share of FDI flows worldwide absorbed by the EU during the SMP period is noted. It is not implausible to argue that other developed countries offer an approximate *anti-monde* to developments in the EU — i.e., other developed countries were impacted by significant global economic trends such as globalization and technological progress in presumably similar ways to the EU, but did not share in the single market programme (SMP). Therefore, the EU's outstanding performance in attracting FDI flows during the single market's establishment period could well be linked to the single market process. MNEs around the world may have come to believe that the SMP is and will continue to have significantly beneficial growth impacts on the EU economy, and that therefore the EU is a potentially good location for improving future profitability.

Another, more systematic way of estimating the SMP effect on intra-EU FDI flows is to assess whether such flows have risen more rapidly than might have been predicted from a conventionally specified model of FDI determinants without an explicit indicator for the single market. The result would portray the *anti-monde* effect of the completion of the SMP. In the rest of this section, the results of work carried out by EAG (1996) and CEPS (1996) in this spirit are presented.

CEPS makes use of a so-called gravity model to try to explain the geographical distribution of outward FDI flows and exports for France, Germany, Japan, Sweden, the UK and the US, using data for a panel of destination countries for the years 1982 to 1993 (see Box 7 below for more details). It is estimated that a 1% increase in a country's income leads to a more than proportionate increase in FDI into that country. The single market, to the extent that it has achieved its expected result of raising incomes inside the Community, must therefore have led to an increase in FDI targeting the EU. More directly, it is estimated that FDI flows from France to the EU were 100% higher due to the SMP in 1989 than they would have been in the absence of the SMP, whilst German FDI flows to the EU were 80% higher in their peak year 1990, and British FDI flows to the EU were 200% higher in 1989. Sweden, despite only recently becoming a Member State, also stepped up FDI to the EU following implementation of the SMP. On the other hand, the SMP does not seem to have had any impact on the intensity of Japanese and US investment in the EU.

EAG use an econometric model to yield explicit estimates of the impact of declining non-tariff barriers on cross-border investment and the extent to which there has been a significant structural change in the pattern of investment since the middle of the 1980s. Arguing that the quality of the available aggregate EU sectoral data is limited, they only look at the determinants of outward FDI from the UK and Germany. However, these two EU countries account for the largest level of outward overseas investment, some 55% of the total stock of FDI by EU Member States as of 1989. The geographical pattern of the recorded stocks of UK and German foreign direct investment is reported in Table 19.[1] Detailed discussion of the econometric methodology used can be found in Appendix 3.

EAG estimates that the single market programme may have raised the constant price stock of UK investment in the EU

[1] The EU figures are for the 12 Member States as of 1994; they therefore include data for Greece, Spain and Portugal prior to their accession into the EC.

Box 7: Gravity models applied to FDI

CEPS make use of a 'gravity model' to study FDI flows in the EU during the 1980s and 1990s. Such models have been well used to study bilateral trade flow volumes and provided for one of the initial estimates of the impact of the EEC on European trade flows (Aitken (1973)). It has also recently been applied by Eaton and Tamura (1996) to explain US and Japanese FDI data. The gravity model relates bilateral FDI and trade flows to factors reflecting country size (proxied by population), supply and demand (reflected by income), transport costs (measured by distance), and the fixed costs of establishing an overseas plant (a possible proxy being the level of human capital — CEPS investigate to see whether this has any effects but the results are insignificant, although available indicators used not felt to be satisfactory).

Typically, the standard gravity model describes the trade flow from a particular source country (i) to a particular destination country (j) in terms of the following relationship:

$$\ln X_{ij} = \alpha + \beta_1 \ln GDP_i + \beta_2 \ln POP_i + \beta_3 \ln GDP_j + \beta_4 \ln POP_j + \beta_5 \ln DIST_{ij} + \Sigma \gamma_k D_{kij}$$

where Xij is the value of the trade flow from country i (exporter) to country j (importer)

GDPi is the gross domestic product of country i

POPi is the population of country i

DISTij is the distance between countries i and j

Dkij are dummy variables representing the adjacency of i and j (ADJ) and preference relationships between i and j. These additional variables also take account of artificial trade barriers

α, βi and γk are parameters to be estimated.

The evolution of FDI flows shares some of the principal characteristics of the development of trade flows. FDI has tended to become more intense between similar countries, in terms of having high incomes, and has grown at a faster rate than income (and exports). This suggests that a gravity-type approach could be useful in explaining the geographical distribution of FDI flows, a view reinforced by the recent theoretical developments which show how economic size and relative resource endowments can be important determinants of FDI. As for distance, theory suggests that firms will tend to prefer FDI to exports as trade costs, as proxied by distance, rise. More distant markets will tend to be served by overseas affiliates rather than by exporting.

A simple standard version of the gravity model is therefore used to explain the geographical distribution of outward FDI and exports for France, Germany, Japan, Sweden, the UK and the US using a panel of destination countries for data pooled over the period 1982 to 1993. A dummy variable is added to assess whether FDI flows to EU countries are higher than can be explained on the basis of income, population and distance alone.

The results strongly suggest that GDP in the destination market is a highly significant determinant of the geographical distribution of a country's outward FDI flows. For exports, GDP is similarly a highly significant explanatory variable. However, the income effect is much larger on FDI than exports. Thus, FDI and exports will tend increasingly to be directed towards richer countries and, as incomes rise *ceteris paribus*, both FDI and exports will increase, but the rise in FDI will be the more pronounced.

For all the countries, population is found to have a negative and significant effect. In other words, populous countries tend to receive less foreign investment and trade less. In all cases, population has a larger negative impact on FDI than exports. Distance, in general, is found to have a dampening effect upon both FDI and exports, but more on exports than FDI, as theory would predict. The results, however, are found to be less reliable in the case of FDI compared to exports, and caution is recommended.

The parameter on the dummy variable for FDI outflows from France, the UK and Germany to EU countries is found to be large, positive and highly statistically significant. For France, it would appear that FDI outflows to other EU Member States are six times higher than might be expected on the basis of income, population and distance alone. The effect is even greater for the UK — eight times. The intensity of German FDI outflows to other EU Member States is much less — only twice as high. For Sweden, FDI flows to the EU are only 50% higher than one would expect from the standard gravity model variables. Japanese FDI flows to the EU are less than the gravity model would predict. For the US, the EU dummy is not significant.

To capture the SMP effect on FDI flows in the EU, two sub-samples are used to reestimate the gravity model: 1982-87, and 1988-93. The first is treated as the pre-SMP period, and the latter is taken to be the period when the SMP impact should be apparent on FDI flows. The approach then is to assess whether the magnitude of the EU dummy changes between the two sub-periods. An SMP effect should be reflected in an increase in the intensity of intra-EU FDI relative to FDI to other countries once distance, population, income and the general trend in FDI flows have been taken into account.

For France and the UK, the value of the EU dummy is considerably larger in the latter period than in the earlier one. In the first period, French FDI to the EU was about five times higher than one would expect on the basis of the standard gravity model. Between 1988 and 1993, however, this EU effect had risen to a magnitude of almost seven times higher. For the UK, the rise was from a factor of four in the earlier period, to a factor of 18 in the latter one! For Germany, only a slight increase is registered. For Sweden, flows were well predicted by the gravity model in the earlier period, but double in the latter. No impact is found for Japan and the US. Little evidence is found that the driving force for extra FDI in the EU in the latter period could be put down to the accession of Spain and Portugal. Overall, it is estimated that in the year of its peak effect, the SMP increased FDI to the EU by 100% for France, 80% for Germany, and 200% for the UK.

by some USD 15 billion as of 1992. This represents around 31% of the aggregate stock level at that date. The level of outward German FDI in the EU seems to have been considerably less affected by the SMP than the UK. As of 1992, the SMP is estimated to have raised the constant price stock of German FDI by some USD 5.0 billion, equivalent to 6½% of the aggregate stock level. The primary beneficiary appears to have been the UK, where investment is some USD 4.3 billion higher than it would otherwise have been, roughly one third of the reported stock level in that country. These results are very much in line with the results found by CEPS.

Table 19

The geographical pattern of UK and German outward foreign direct investment (% of total stock)

	1978	1981	1984	1987	1991	1992	1993
UK manufacturing							
EU	25.7	21.6	17.8	27.3	32.0	33.2	38.7
EFTA	2.2	1.6	2.6	1.8	1.7	1.9	1.0
North America	30.7	39.3	44.6	43.5	46.0	42.8	38.9
Other developed[1]	24.0	20.9	20.5	14.8	8.7	9.1	8.6
Rest of the world	17.5	16.5	14.4	12.6	11.5	13.1	12.8
UK all industries[2]							
EU	25.4	20.7	21.1	27.9	26.9	26.1	32.0
EFTA	5.1	2.1	3.4	3.2	3.0	3.0	2.7
North America	26.1	34.6	41.6	41.3	42.7	41.8	39.0
Other developed	23.1	20.4	15.4	11.1	10.3	10.0	9.9
Rest of the world	20.2	22.2	18.5	16.6	17.1	19.2	16.4
German manufacturing							
EU	32.2	29.9	28.8	34.5	41.6	39.7	35.5
EFTA	10.0	8.4	7.8	9.1	8.6	9.1	8.9
North America	28.3	32.8	36.4	33.4	29.3	28.5	30.6
Other developed	4.3	5.3	5.3	4.8	4.6	4.5	4.7
Rest of the world	25.2	23.6	21.7	18.2	15.9	18.2	20.3
Germany all industries							
EU	38.5	34.0	32.2	39.2	51.0	50.3	48.0
EFTA	12.2	10.1	8.8	10.4	9.5	9.0	9.0
North America	20.3	27.9	33.4	29.9	25.3	25.6	26.4
Other developed	3.6	4.4	4.1	4.3	3.9	3.8	4.3
Rest of the world	25.4	23.6	21.4	16.2	10.3	11.3	12.3

[1] South Africa, Australia, New Zealand and Japan.
[2] Excludes energy investments prior to 1984.

Source: Business Monitor MA4, various issues and Deutsche Bundesbank.

The sectoral distribution of the UK's FDI stock in the EU

Of the extra estimated USD15 billion of outward UK FDI stock in the EU in 1992 due to the SMP, FDI in services represents about half. The stock of financial services FDI alone was higher by USD 5.0 billion as a result of the SMP (see Table 20). Within manufacturing, the effects for the electrical goods and chemical sectors are much greater than for either mechanical engineering or for food, drink and tobacco. The results provide little indication that the single market has led UK companies to reduce outward investment in order to exploit economies of scale from domestic production fully.

The sectoral distribution of German outward FDI stock in the EU

Germany's sector results (methodological details are given in Appendix 3) are similar to those for the UK in that they show the largest gains arising in financial services (see Table 21). However there is little overall gain in distribution. Within manufacturing, the largest gains are for electronics and 'other' manufacturing, with small drops for chemicals and mechanical engineering. In proportionate terms the SMP has had a particularly marked effect in the electrical sector, accounting for some 21% of the outstanding stock of German direct investment in the EU.

It is clear that using this econometric methodology the SMP has had a significantly differential impact on the sectoral distribution of FDI (results summarized in Table 22) for both German and UK outward stocks. Services have indeed been the most affected as would be expected given the high level of NTBs which the SMP has sought to remove, their frequent non-tradeability,[1] and their having significant firm-specific assets.

[1] In terms of FDI theory, trade costs are very high.

Table 20

Impact of the internal market on UK FDI in the EU

(USD billion, 1990)

Sector	1992 stock	SMP effect
Chemicals	8.01	2.12
Mechanical engineering	0.83	0.12
Electrical	2.69	0.99
Food, drink and tobacco	6.36	2.35
Other manufacturing	6.15	1.63
Distribution	11.09	2.94
Financial and other services	13.20	4.88

Table 21

Impact of the internal market on the composition of German FDI in the EU

(USD billion, 1990)

Sector	1992 stock	SMP effect
Chemicals	9.5	– 0.4
Mechanical engineering	2.4	– 0.5
Electrical	4.8	1.0
Food, drink and tobacco	4.0	0.4
Other manufacturing	7.1	0.9
Distribution	17.3	0.3
Financial and other services	31.3	3.3

Table 22

Significance of internal market on industrial sectors

Sectors	Significance of IM effect to total FDI stock (%)
United Kingdom	
Chemicals	26.5
Mechanical engineering	14.5
Electrical	36.8
Food, Drink and tobacco	36.9
Other manufacturing	26.5
Distribution	26.5
Financial and other services	36.9
Germany	
Chemicals	– 4.2
Machinery	– 20.8
Electrical	20.8
Transport equipment	10
Other manufacturing	12.7
Distribution	1.7
Financial and other services	10.5

Source: EAG.

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Appendix 1: Assessing the effects of economic integration on trade flows

Quantitative studies of integration arrangements have been extensively concerned by assessing the impact of integration on trade patterns. Since the theory is unable to provide unambiguous generalizations on the welfare impacts of economic integration, the aim of many of these studies is to gauge the impact of integration in terms of income and welfare through the analysis of changes, both static and/or dynamic, in trade flows (Hine (1994)). Assessments of the impact of integration on trade flows try to answer two questions. Firstly, to what extent the eventual increase in trade amongst partners is due to the integration process underway and, secondly, to what extent this is at the expense of trade with non-member countries. To answer these questions requires building a model which incorporates all the factors determining trade. Such a model should fulfil all the characteristics of what Mayes (1978) calls analytic models and would provide an economic explanation of the actual trade flows after economic integration. Building analytic models is a very difficult task, given their substantial data requirements, and consequently much empirical work has concentrated on the so-called residual imputation models. These models establish relationships between trade and a set of key variables, and such a relationship is used to assess what would have happened to trade in the absence of integration. This hypothetical scenario is known as the *anti-monde*, as opposed to the *monde*, which is what actually happened (see Hine (1994) and Mayes (1978)). Following Mayes, the major advantage of analytical models is that they can be tested after the event and can be used for forecasting as well as *ex post* estimation, whilst in residual models there is no means of testing its validity other than the plausibility of the results and the behaviour of the model in different observable situations.

Residual models provide an *ex post* (after the event), quantification of the impacts on trade by comparing 'what actually did happen with what might have' and 'make use of the experience with integration' (Hine (1994)). *Ex ante* models (before the event), on the contrary, generate two hypothetical situations with and without integration. We are interested in the *ex post* quantification of the impact of the SMP. Since we only dispose of a few observations in the post-SMP period, most of the econometric models proposed in the literature on *ex post* quantification of trade creation and diversion, when applied to the assessment of the impact of the SMP, would fall in the category of residual models.[1] Under these circumstances, only a CGE adequately calibrated in both the pre- and post-SMP period could be considered as a good approximation of an ideal analytical model. However, we should keep in mind that even these kinds of models are forcefully simple and that they do not fulfil all the conditions established by Mayes (1978) to provide a full determination of trade flows.[2] In other words, both residual and analytical models will lead to biased estimations of the effects on trade. The only thing we can do is to think of a series of partial but complementary approaches, which lead not only to reasonable unbiased quantification of the impact of the SMP on trade flows but also to a clear distinction between the standard, direct effects, the competition effects and the dynamic effects.

Despite their limitations, residual models form the bulk of *ex post* models to quantify the impact of economic integration on trade. Focusing on residual approaches to assess the impact of integration on trade flows, the final research programme on measuring accession effects *ex post*, as described in Mayes (1978), is Winters (1984a),[3] who adopts the almost ideal demand system (AIDS)[4] to examine the effects on trade creation and diversion of the UK's accession to the common market.[5] His methodology follows Truman's approach of modelling shares in apparent consumption. Basically, he presumes that total expenditure on a given good is determined by a higher stage budgeting process that considers national income and the price indices for the different aggregate goods available. Then, such total expenditure is allocated across import sources and domestic supplies consistently with the AIDS structure. This explains the shares of imports from trade partners and the share of domestic supplies on total expenditure on the aggregate good as a particular function of real expenditure and the prices of both import sources and domestic supplies.

As pointed out by Winters (1987) this approach greatly improved the research programme on assessing the impact of economic integration on import flows. On the one hand, it explicitly assumes that the demand for imports not only depends on import prices and domestic income, as in the previous stage of the programme,[6] but also on the price of home goods. In other words, Winter's proposal to model import flows allows the disentanglement of cyclical effects (income

[1] Gravity models (see Aitken (1973) and Mayes (1978) are sometimes considered an exception to this rule, since they can rely on cross-section methods. However, they are forcefully simple and the impact is represented by dummies and/or changes in the parameters, which do not provide the economic explanation of the changes induced by economic integration.

[2] Mayes points out that in order to obtain an unbiased model, it should include economic variables determining the behaviour in the importing, exporting and third countries, as well as variables explaining the specific characteristics of trade between partners.

[3] See also Winters (1984b).

[4] See Deaton and Muellbauer (1980).

[5] The same methodology has recently been applied by de Boer et al. (1995) to the Spanish accession to the EU. The previous work on the SMP effects by Brenton and Winters (1992) fails in this tradition.

[6] See Mayes (1978) and Winters (1987) for a critical review of the literature. Walter (1967), Truman (1969), Balassa (1974) and Morgan (1980) are some representative examples of early import models.

effects) as well as changes in price differentials from the impact of other factors, such as policy changes. On the other hand, the consideration of a complete demand system is that it treats the allocation of income over sources in a consistent and rigorous fashion, drawing on a number of results from consumer demand theory, which imposes a well known number of constraints on import allocation models. Furthermore, when applied to assessing the impact of changes in tariff barriers, as used to be the case of the accession of a new country to the Community, changes in tariffs can be incorporated quite simply by altering relative prices. Finally, in the tradition of residual models, a number of dummy variables can be added to represent non-price effects.

One the most common features of the empirical literature, which has very often focused on European integration, is that the impacts on trade flows mainly consist of trade creation, both internal and external, whilst trade diversion, if any, is comparatively lower than trade creation (see Mayes (1978), Winters (1987) and Hine (1994)).[1] Therefore, most residual *ex post* models suggest the existence of positive impacts on welfare. However, as pointed by Hine (1994) the order of magnitude of such welfare gains may appear minimal when measured in terms of the actual GDP.

The evaluation of inter- versus intra-industry trade has been developed in the literature in the following ways.

Intra-industry trade must be quantified with tools implementing a distinction in terms of differentiation. As far as products are not sold at the same price, even if produced in the same country, they do not entail the same content of factor services. The difference might be based on fixed costs of development increasing with the level of quality and on variable costs associated with a content of capital or qualified labour increasing with quality (Greenway, Hines and Milner, 1994, Greenaway, Milner and Eliott, 1996, have also used an approach based on the use of unit value differences as an indicator of quality). Whatever this basis would be, it would imply a net factor content of trade which is not necessary nil, even if trade is balanced and perfectly intra-industry. This means that potential effects associated in vertically differentiated products are not those referred to in the literature on horizontal differentiation. Adjustments costs might replicate, inside industries, effects observed between industries in the inter-industry/specialization framework.

Moreover, inter-industry trade must be disconnected from its traditional comparative advantage basis, in order to integrate new considerations like externalities, agglomeration effects, etc. The mono location of industries subject to externalities will lead to a sectoral specialization and interindustry trade is then possible without any initial comparative advantage. Agglomeration effects could lead to a concentration of firms in special regions.

[1] The results by de Boer et al. on the Spanish case are also consistent with this empirical regularity.

Appendix 2: The impact of the SMP on intra-EU trade. Evidence provided by the Eurostat Business Survey. Geographical and sectoral breakdown

A.2.1. Geographical breakdown

Irish and south European firms are much more positive in assessing the SMP impact on EU sales than companies located in the UK, Germany, France, Belgium and Luxembourg. Spanish and Italian firms in the manufacturing sector, and Greek enterprises in the service sector, have a well-above-average positive perception of the SMP impact on intra-EU sales (see Table 1 below). The weight of large firms in the positive responses given by interviewees varies greatly across Member States. This is particularly true when comparing the size-weighted results for countries such as Portugal and Greece with those for Ireland. Indeed, when the weighting is done by the number of employees, Portuguese and Greek enterprises reach 41% and 42% of positive opinions respectively, against only 29% and 34% when weighted by number of firms — thus suggesting that a sizeable proportion of large firms have responded favourably to the question of the impact of the internal market on cross-border EU sales. In Ireland, on the contrary, weighting by number of employees produces a lower figure (36%) in favour of the SMP than that of the weighting by number of firms (37%), thus implying that SMEs in this country have a casting vote when assessing the positive contribution of the SMP to the companies' increase in EU sales.

A.2.2. Sectoral breakdown

Sectors like textiles, leather and furniture, machinery and equipment NEC, and the chemicals industry — that were previously heavily regulated and suffered from market fragmentation — benefited most from the removal of trade barriers. The weight of large firms supporting the assertion of a positive impact is particularly apparent in the food, beverage and tobacco processing machinery sector where 28% of the

Table A.2.1

The positive effect of the SMP on sales to other EU countries. All sectors. Percentages.

Industry sector					Services sector		
Member State	Positive impact (weighted by number of firms)	Rank	Positive impact (weighted by number of employees)	Rank	Member State	Positive impact (weighted by number of firms)[2]	Rank
Spain	47	1	54	1	Greece	41	1
Italy	42	2	46	2	Spain	18	2
Ireland	37	3	36	6	Ireland	18	3
Greece	34	4	42	3	Italy	16	4
Denmark	33	5	39	5	France	16	5
Portugal	29	6	41	4	Denmark	14	6
EU 12	**28**	–	30	–	Luxembourg	13	7
Netherlands	27	7	29	7	Portugal	12	8
France	21	8	24	9	Belgium	12	8
UK	20	9	28	8	**EU 11**[1]	**12**	–
Luxembourg	20	10	28	8	UK	9	9
Belgium	18	11	21	10	Netherlands	6	10
Germany	16	12	20	11			

[1] The German services sector has not been surveyed. The European average for the services sector is therefore based on 11 EU countries.
[2] In the services sector, no weighting by number of employees was made when dealing with national results.

Source: Eurostat.

total number of firms represents 38% of the sector weighted by number of employees.

The average positive impact of the SMP on intra-EU sales in the services sector is 12%, that is 19% of the sector when weighted by number of employees. These relatively low figures can be explained by the fact that most firms in the services sector are SMEs, with only local or national coverage. The highest result when weighted in number of firms has logically been obtained in the transport, storage and communication sector. Furthermore, large enterprises in the financial intermediation sector seem to have had an enormous weight in assessing the positive effect of the internal market on cross-border sales, thus converting the lowest figure (7%) of Table 3 (weighting by number of firms) into the highest one (24%) when weighted in terms of employee population.

Table A.2.2

The positive effect of the single market programme on sales to other EU countries. Manufacturing sector. Percentages.

Industry sector	Positive impact (weighted by number of firms)	Rank	Positive impact (weighted by number of employees)	Rank
Textiles, leather and furniture	34	1	35	2
Machinery and equipment NEC	31	2	27	7
Chemicals, rubber and plastics	30	3	34	3
Food, beverage, and tobacco machinery	28	4	38	1
EU 12	**28**	–	**30**	–
Electrical and optical machinery	27	5	30	5
Metals and metal products	27	6	29	6
Non-metallic mineral products	25	7	31	4
Wood, paper and printing/publishing	20	8	22	9
Transport equipment	19	9	25	8

Source: Eurostat.

Table A.2.3

The positive effect of the single market programme on sales to other EU countries. Service sector. Percentages.

Services sector	Positive impact (weighted by number of firms)	Rank	Positive impact (weighted by number of employees)	Rank
Transport, storage and communication	18	1	21	3
Property and business activities	13	2	16	2
EU 11[1]	**12**	–	**19**	–
Hotels and restaurants	10	3	15	4
Financial intermediation	7	4	24	1

[1] The German services sector has not been surveyed. The European average for the services sector is therefore based on 11 EU countries.

Source: Eurostat.

Appendix 3: Econometric methodology used to estimate the single market impact on FDI

A.3.1. Introduction

The primary objective of the econometric work is to quantify the impact of the single market programme on the sectoral and geographical pattern of intra-EU foreign direct investment.

A.3.2. Data sources and approach to empirical study

Two separate studies have been undertaken looking at the determinants of outward FDI from the UK and Germany. These are the two EU countries with the largest level of outward overseas investment, accounting for some 55% of the total stock of FDI by EU Member States (and 23% of OECD FDI) as of 1989. Both countries publish detailed statistics on the sectoral and geographical split of their overseas investments in regular publications, and data can be readily obtained from the late 1970s through to 1993.

The analysis draws on two separate panel data sets for the UK and Germany. For the UK, the evolution of investment in the EU as a whole and in the United States is examined, reflecting the absence of consistent data by sector for a number of EU locations. For Germany, a panel was constructed with eight separate locations, six within the EU, plus the United States and Austria. The six EU locations were Belgium and Luxembourg, the UK, France, Italy, the Netherlands and Spain/Portugal. Investments in Denmark and Greece were excluded on grounds of size.

Although the main interest is in intra-EU investments, it is important to include Austria and the US as comparator groups (subject to the availability of consistent data). Inclusion of Austria allows separation of factors that affect European investment inside and outside the EU, whilst inclusion of the US provides a means of picking up the underlying upward trend in FDI in the 1980s throughout the developed world. No data on investment in EFTA is included in the UK panel as investment is negligible.

In both cases the available investment data was amalgamated into seven separate sectors, five for manufacturing and two for services. Investments in energy, mining, construction, transport services and real estate were excluded where possible. There are relatively minor differences in the sector composition for the two countries. In manufacturing, food, drink and tobacco can be separately identified for the UK, but not for Germany, where it is included in the 'other manufacturing' group. For Germany the latter measure is given by total manufacturing investment less investments in the four separately identified industries. For the UK, 'other manufacturing' is given by total manufacturing investment excluding paper, metals and metal products, transport equipment (where investment is negligible) and the four separately identified industries. As of 1993, the seven sectors account for 83% of the UK stock of non-energy FDI in the EC and 85% of the UK stock of non-energy FDI in the US. The equivalent proportions for Germany are 93% and 97% respectively.

A.3.3. The econometric model and techniques used

The German data set assembled has 13 annual observations (1980-92) for seven sectors in eight separate locations giving a total panel size of 728 observations. The UK panel is smaller, with 12 annual observations (1981-92) for seven sectors in two localities, giving a total of 168 data points. All the main explanatory variables, with the exception of the gearing ratio for the UK, are entered in logarithmic form, permitting direct estimates of their elasticities.

In practice the existence of adjustment costs due to delivery lags, delays in finding suitable investments overseas and delays in obtaining planning permission, means that the desired and actual stocks of investment are unlikely to be equal period by period. A partial adjustment model is therefore used in estimation, whereby the aggregate change in the investment stock (i.e. the flow of new direct investments) is a function of the discrepancy between the current desired capital stock (denoted S^*_{jt}) and the actual stock at the end of the previous period:

$$\Delta \ln(S_{jt}) = \omega\left[\ln(S^*_{jt}) - \ln(S_{jt-1})\right] \qquad [1]$$

or, equivalently:

$$\ln(S_{jt}) = \omega \ln(S^*_{jt}) + (1-\omega)\ln(S_{j,t-1}) \qquad [2]$$

This provides an important distinction between the model used here and those used in earlier studies of intra-EU direct investment. Culem (1988) and Molle and Morsink (1991) both relate the current change in the investment stock to the factors that determine the desired stock, even though the standard neoclassical model relates the investment stock to relative costs. Omission of the lagged stock ignores potentially valuable information and could potentially generate misspecification. Of course, it is possible to substitute out for the lagged stock in [2] using the identity:

$$S_{j,t} = \sum_{(i)}^{n} (1-\partial_j)^i . I_{j,t-1} \qquad [3]$$

where ∂_j denotes the rate of depreciation and I_j the flow of new investment ($\cong \Delta S_j$), although this implies that lagged terms in the flow of investment should be included in [2]. These terms are typically omitted from the previous studies that focus on direct investment flows.

The existence of a lagged dependent variable induces small sample bias into panel estimates produced using OLS (Nickell, 1981), so that an instrumental variable estimator has to be employed. There are a number of potential instruments that can be used for the lagged dependent variable; one possibility is to employ the second lag of the dependent variable. An alternative is to use the rank order of the lagged dependent variable. This latter instrument is clearly strongly correlated with the variable being instrumented, but has been 'cleaned' of the lagged disturbance term.

However it may be a poor instrument if there is substantial measurement error present in the instrumented variable and, hence, in the associated rank order. A priori, measurement error is more likely to be present in the UK data given the need to construct some data by interpolation. The rank order is thus used as an instrument in the German panel study alone. For the UK the higher order lag of the dependent variable is used.

Partial adjustment models are also used to avoid problems raised by non-stationary variables (there are three non-stationary variables in the panel model: the stock of foreign direct investment, output and the stock of patents). The results are not significant.

A.3.4. Significance of the variables employed

The main empirical results for the UK are summarized in Table A.3.1. The first column (labelled (1.1)) reports the estimates of a simple model which does not include any explicit variable to capture single market effects. This illustrates that it is possible to obtain a parsimonious, economically coherent model for the pattern of FDI by UK firms over the period from 1981.

There are significant effects from both host region output and patents, with respective elasticities of 1.54 and 2.03%. A sizeable, positive effect is also obtained from relative unit labour costs, although it is not statistically significant. One possible explanation for this finding is that foreign labour costs can have a dual effect (Cushman, 1988), as they affect both the location decision and the optimal factor mix at a particular location. However, inclusion of a relative factor price term made little difference to the reported results. Although the term was correctly signed, with a positive coefficient, it was not significant (with a t-ratio of 0.96). The lack of significance of labour costs is in accordance with the findings of Papanastassiou and Pearce (1991).

The corporate gearing measure appears to have a significant impact on investment, with a long-run semi-elasticity of –1.66%. This implies that a one percentage point rise in gearing will eventually reduce investment by 1.66%. This term should be seen primarily as an indicator of the extent to which changes in domestic financial conditions affect the timing and the size of the flow of direct investment. As the gearing ratio cannot be expected to permanently trend over time, it cannot be the primary factor behind the continuing upward trend in the stock of investment.

One additional term in (1.1.), denoted USME, is a dummy variable set to unity in 1992 to allow for a large change in the recorded book value of UK investments in mechanical engineering in the US in 1992. This change appeared to be unrelated to either the flow of investment in 1992 or currency movements that year. The inclusion of the dummy does not have a marked effect on the reported coefficients, but is necessary to ensure the validity of the subsequent hypothesis tests.

The single market indicator based on mergers and acquisitions data is introduced in equation (1.2). This is denoted IM and is set to zero for all the US sectors. For the EU sectors it has the value of 1, 2 or 3 from 1987 onwards. The significance of the variable provides support for the hypothesis that the single market has resulted in an increased level of investment within the European Union by UK firms.

One point of interest is that the implied elasticities on output and patents are now smaller than in (1.1), at 1.17 and 1.66% respectively, suggesting that some of the impact of the single market was previously being assigned to these variables. The continued presence of the lagged dependent variable means that the model has the implication that the impact of the single market has built up over time.

The main empirical results for Germany are summarized in Table A.3.2. The first column (2.1) reports the basic model for German FDI, which has a structure similar to that obtained for the UK. There is again evidence that host country output, relative unit labour costs and the level of patents registered by German corporations are important factors behind the growth of FDI. Relative labour costs appear to be better determined than in the UK equations, although the implied elasticity is a little smaller at 0.36%. The output and patents elasticities are also lower at 0.84 and 1.3% respectively, although this may simply be because the level of patents registered by German companies grew much more rapidly over the 1980s than the

Table A.3.1

The determinants of UK outward FDI

Dependent variable: ln $(FDI)_t$		Sample period: 1981-92			
	(1.1)	(1.2)	(1.3)	(1.4)	(1.5)
ln $(FDI)_{t-1}$	0.5501 (7.7)	0.5594 (8.1)	0.5318 (7.3)	0.5481 (7.9)	0.5509 (7.9)
ln $(Y)_t$	0.6934 (2.6)	0.5148 (2.0)	0.5157 (1.9)	0.3061 (1.5)	0.4654 (1.8)
ln $(REL)_t$	0.2965 (0.8)	0.4711 (1.3)	0.5009 (1.3)	0.2516 (0.6)	0.5066 (1.3)
ln $(PAT)_t$	0.9140 (5.1)	0.7386 (4.1)	0.8253 (4.2)	0.5994 (3.2)	0.8061 (4.3)
$CASH_{t-1}$	− 0.7488 (1.9)	− 0.7750 (2.0)	− 0.8049 (2.0)	− 0.8042 (2.1)	− 0.7950 (2.0)
$USME_t$	− 0.9665 (4.3)	− 0.9375 (4.3)	− 0.9059 (4.1)	− 0.9034 (4.2)	− 0.9140 (4.2)
IM_t		0.0699 (3.2)		0.0951 (3.7)	
$IMCH_t$			0.1483 (1.2)		
$IMME_t$			0.0319 (0.3)		
$IMEE_t$			0.1550 (1.2)		
$IMFD_t$			0.0291 (0.2)		
$IMOM_t$			0.2948 (2.4)		
$IMDS_t$			0.2601 (2.1)		
$IMFS_t$			0.2811 (2.2)		
$IMUS_t$				0.0583 (1.9)	
$IMIND_t$					0.0539 (2.1)
$IMSER_t$					0.1032 (2.9)
R^2	0.943	0.946	0.946	0.954	0.953
Standard error	0.2054	0.1989	0.1999	0.1971	0.1988
Test		2.71	1.70	1.65	2.07

Variable definitions
FDI - Stock of UK FDI (USD million, 1990 prices)
Y - Sectoral output (USD million, 1990 prices)
REL - Relative UK/foreign unit labour costs
PAT - Stock of UK sectoral patents (three-year cumulation)
CASH - Ratio of debt interest payments to UK corporate cash flow
USME -Dummy variable for outlier in investment in US mechanical engineering sector
IM - Sectoral internal market indicator for EU (zero before 1987)
IMUS - Sectoral internal market indicator for US (zero before 1987)
IMCH - Dummy variable for EU chemicals (1 from 1987-92)
IMME - Dummy variable for EU mechanical engineering (1 from 1987-92)
IMEE - Dummy variable for EU electronics (1 from 1987-92)
IMFD - Dummy variable for EU food, drink and tobacco (1 from 1987-92)
IMOM - Dummy variable for EU other manufacturing (1 from 1987-92)
IMDS - Dummy variable for EU distribution (1 from 1987-92)
IMFS -Dummy variable for EU financial services (1 from 1987-92)
IMIND = IMCH + IMME + IMEE + IMFD +IMOM
IMSER = IMDS + IMFS

number of patents registered by UK companies. It has been argued that because the major European economies have a similar market size and costs of production, location-specific advantages may be linked to host country technological conditions (Cantwell and Sanna Randaccio, 1992). However no significant effect from indicators based on patents registered by corporations in the respective host countries are obtained.

After some experimentation financial effects were best captured by a relative factor price term, given by the ratio of the user cost of capital for German corporations to foreign unit labour costs. (In effect this can be considered as one estimate of the real user cost of capital.) A 1% rise in the cost of capital is estimated to eventually led to a 0.34% reduction in the level of investment, other things being equal. No significant effect from either an interest gearing term or from net corporate

Table A.3.2

The determinants of German FDI

Dependent variable: ln $(FDI)_t$		Sample period: 1980-92			
	(2.1)	(2.2)	(2.3)	(2.4)	(2.5)
$\ln (FDI)_{t-1}$	0.4513 (8.4)	0.4430 (8.2)	0.4511 (8.6)	0.4426 (8.2)	0.4436 (8.2)
$\ln (Y)_t$	0.4630 (3.8)	0.4755 (3.9)	0.3700 (2.9)	0.5022 (4.1)	0.3854 (3.1)
$\ln (REL)_t$	0.1999 (1.9)	0.1973 (1.9)	0.2464 (2.3)	0.2565 (2.2)	0.2059 (1.9)
$\ln (PAT)_t$	0.7162 (5.9)	0.6271 (5.1)	0.6358 (4.8)	0.6762 (5.4)	0.7419 (5.9)
$\ln (REC)_t$	− 0.1861 (3.2)	− 0.1051 (1.5)	− 0.1680 (2.3)	− 0.1332 (1.9)	− 0.1400 (2.0)
$EXCH_t$	0.1140 (2.5)	0.1317 (2.8)	0.1205 (2.7)	0.1327 (2.9)	0.1192 (2.6)
IM_t		0.0393 (2.9)		0.0248 (1.6)	
$IMCH_t$			− 0.0625 (1.1)		
$IMME_t$			− 0.0642 (1.1)		
$IMEE_t$			0.0181 (0.3)		
$IMTR_t$			0.1451 (2.2)		
$IMOM_t$			0.0748 (1.3)		
$IMDS_t$			0.0069 (0.1)		
$IMFS_t$			0.2391 (3.7)		
$IMUS_t$				− 0.0315 (1.2)	
$IMOE_t$				− 0.0311 (1.3)	
$IMIND_t$					0.0154 (0.4)
$IMSER_t$					0.1229 (2.5)
R^2	0.972	0.973	0.973	0.973	0.973
Standard error	0.2274	0.2267	0.2236	0.2266	0.2272

Variable Definitions

FDI - Stock of German FDI (USD million, 1990 prices)
Y - Sectoral output (USD million, 1990 prices)
REL - Relative German/foreign unit labour costs
PAT - Stock of German sectoral patents (three year cumulation)
REC - German user cost of capital relative to foreign labour costs
EXCH - Dummy variable for fixed bilateral exchange rate (1 for ERM members and Austria)
IM - Sectoral internal market indicator for EU (zero before 1987)
IMOE - Sectoral internal market indicator for Austria (zero before 1987)
IMUS - Sectoral internal market indicator for US (zero before 1987)
IMCH - Dummy variable for EU chemicals (1 from 1987-92)
IMME - Dummy variable for EU mechanical engineering (1 from 1987-92)
IMEE - Dummy variable for EU electronics (1 from 1987-92)
IMTR - Dummy variable for EU transport (1 from 1987-92)
IMOM - Dummy variable for EU other manufacturing (1 from 1987-92)
IMDS - Dummy variable for EU distribution (1 from 1987-92)
IMFS - Dummy variable for EU financial services (1 from 1987-92)
IMIND = IMCH + IMME + IMEE + IMTR +IMOM
IMSER = IMDS + IMFS

indebtedness could be obtained. The results in Barrell, Pain and Hubert (1995) suggest that such terms primarily affect investment in developing locations outside Europe.

Finally, a significant effect is obtained from the proxy variable to capture the impact of currency variability. The term EXCH takes the value of unity for those countries whose currencies are linked to Germany, either through a formal arrangement such the exchange rate mechanism of the EMS, or informally, such as the Austrian schilling. The variable is zero for the UK and Spain, prior to ERM entry in 1990, and zero for the US throughout the sample period. The reported positive coefficient suggests that German corporations value exchange rate stability, and is consistent with the notion that Germany may be the final market for some goods produced elsewhere within Europe.

The single market indicator is introduced in equation (2.2). As with the UK, a significant positive coefficient is obtained, although it is somewhat smaller than that for the UK. The inclusion of the IM variable generates a drop in the elasticities on patents and the user cost of capital. The significance of the term provides an indication that German investment in the EU has, on average across sectors and countries, been higher than might otherwise have been expected since 1987.

A.3.5. Evaluating the impact of the single market on intra-EU FDI

Using the estimated relationships with the IM variable it is possible to calculate the effect of the IM programme on the stock of UK and German FDI in the European Union. The use of the estimated parameters from a model with an explicit indicator for the single market is to be preferred to the alternative of inspecting the pattern of the residuals from a model without such an indicator. This is because such residuals will reflect the impact of all factors otherwise unaccounted for in estimation. Other structural changes, such as the impact of the opening of Eastern Europe, could easily affect the time pattern of the residuals.

All the reported regressions for UK direct investment can be expressed as:

$$\ln(FDI)_t = \alpha \ln(FDI)_{t-1} + \beta\, IM_t + \ldots\ldots \quad [4]$$

Any quantitative evaluation of the estimated impact of the IM variable on particular sectors has to take account of the presence of the lagged dependent variable. At any given period the overall implied direct effect of the single market on the stock of direct investment in a particular sector can be calculated from the regression coefficients using:

$$IMIMPACT = \lambda\beta \sum_{1}^{n} \alpha^{(i-1)} \quad [5]$$

where λ varies between 1-3 and n denotes the number of periods from the start of the single market programme to the time at which the impact of the programme is estimated. Our illustrative calculations are for 1992, so that n=6.

It is similarly possible to use the estimated relationships with the IM variable and the EU country dummies to calculate the effect of the single market programme on the stock of German FDI in any particular sector within a EU Member State. Again it is important to emphasise that such estimates need to be treated with particular caution, not only because the overall single market impact will also arise from the output effect but also because the country dummies may be picking up additional effects unrelated to the single market.

All the reported regressions take the form of [6], where j denotes each EU Member State.

$$\ln(FDI)_t = \alpha \ln(FDI)_{t-1} + \beta\, IM_t + \delta\, IMj_t + \ldots\ldots \quad [6]$$

In estimating the impact of the single market, account needs to be taken of the lagged dependent variable. At any given period the overall effect of the programme on the stock of direct investment in a particular sector and a particular country can be calculated as:

$$IMIMPACT = (\delta + \lambda\beta) \sum_{1}^{n} \alpha^{(i-1)} \quad [7]$$

where λ varies between 1-3 and η denotes the number of periods from the start of the programme to the time at which the impact of the programme is estimated. Our illustrative calculations are for 1992, so that n=6. For simplicity, equation (10.1) is used, although there are obviously a number of other possible specifications that could be used to produce such calculations.

Chapter 5 — Efficiency and competition effects

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Efficiency and competition effects

5.1. Introduction

Many of the beneficial effects of the single marketing programme (SMP) on the European economy were supposed to result from the competitive forces unleashed by the integration of the European economies. The *ex-ante* analysis of the impact of the SMP forecast substantial gains accruing to the European economy through increased efficiency, with lower costs and prices, and increased product variety. The main channels through which these benefits were to be reaped throughout the economy were the exploitation of scale economies in the operations of firms, and the increase in the degree of competition, which would eliminate inefficient firms and lead to a restructuring of European industry.

As argued below, the European economy has indeed benefited from gains in efficiency and competition due to the SMP. These gains have been possible to a large extent thanks to a substantial restructuring of European industry, even if the specific forms in which the SMP has spread through the economy do not sometimes exactly coincide with what was forecast in advance. In particular, the cost reductions related to size achieved over the period 1985-93 have been mostly the result of the exploitation of scale advantages linked to fixed investments in marketing, brand development, R&D spending and development of new products and production processes. Few improvements in efficiency have been the consequence of the exploitation of purely technical efficiency gains related to the size of establishments. Moreover, the restructuring appears to have taken place mostly through the capital market via mergers and acquisitions, with a more limited role for entry, exit and the internal growth or decline of existing firms.

This chapter describes and studies this restructuring process and assesses the extent to which it has led to increased efficiency and competition in European industry. Section 5.2. reviews the main features of the wave of mergers and acquisitions associated with the SMP, and discusses the implications of these changes for the structure of European industries in terms of market concentration and the size of European firms. Section 5.3. looks at the competitive changes triggered by the SMP. Finally, section 5.4. studies to what extent increased competition and cross-border activity across the EU has contributed to the appearance of pan-European markets. This assessment is undertaken with an analysis of price convergence across Europe.

5.2. Changes in the structure of European industries

5.2.1. Mergers and acquisitions

The announcement and the implementation of the SMP has promoted a broad restructuring of the European economy between 1985 and 1995. Chapter 4 has shown that this restructuring process has taken place in part through trade and foreign direct investment (FDI), which has quite often taken the form of cross-border mergers and acquisitions. In fact, the restructuring of European industry has had both a cross-border and a purely domestic dimension. In both cases, the adjustment to the new market circumstances has taken place mostly via mergers, acquisitions and other forms of external growth of firms. The dramatic change in competitive conditions triggered by the SMP in many markets, coupled with the on-going liberalization of the European capital markets (see Box 1), have meant that in many industries, companies have adapted to the new competitive environment by way of takeovers, collaborative agreements, mergers and other kinds of financial and strategic deals.

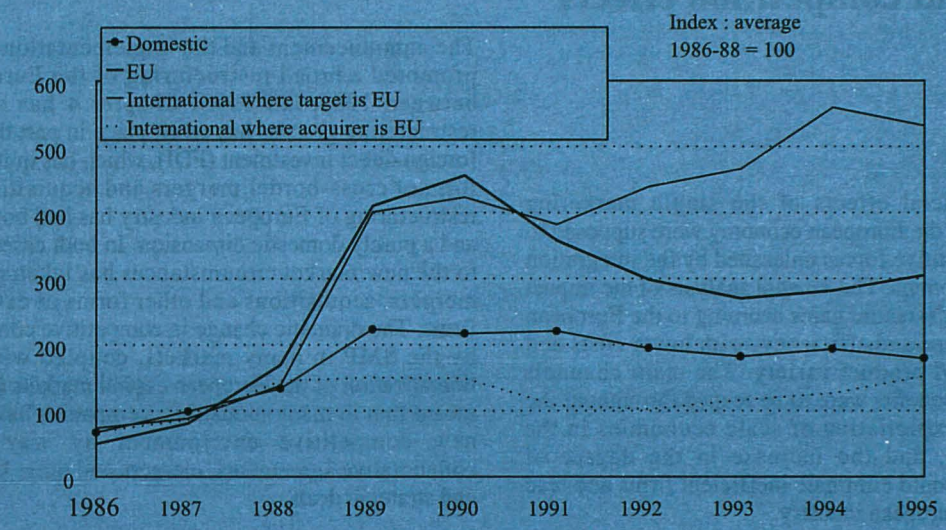
Smith and Walter (1992) point out that the economic restructuring of European industry is not dissimilar to the restructuring that occurred in the United States in the 1980s. These authors show that there is a high correlation between the sectoral impact of restructuring in both economic areas. In particular, industries most affected in the US were also the sectors subject to the strongest restructuring in Europe. Within a context of global industries under an intense process of increased cross-border competition, one may argue that the SMP facilitated the restructuring process in Europe by provoking a drastic change in the competitive environment and liberalizing capital markets (see Box 1).

The increasing importance of European restructuring through the capital markets and the sheer magnitude of this reorganization process is shown, for example, by the growing and dominant proportion of world-wide mergers and acquisitions (domestic or cross-border) involving European firms (Table 1). Between 1985 and 1987, the value of mergers and acquisitions (M&As) involving European firms represented around 20% of the world total, and this figure had risen to almost 43% for the period 1991-93.[1]

The rapid growth of European M&A activity after the launching of the SMP has been particularly strong where all firms involved are EU firms and in operations where only the target company is EU-based. The number of deals of this kind

[1] See also *European Economy* No 7, July 1996. Note that the analysis of M&A data is based upon number of operations because of the incomplete coverage of the data on value.

GRAPH 1: **Evolution of the number of M&As by the origin of the firms involved**



Source: AMData.

has grown by a factor of 3 to 5 between the period 1986-88 and 1995 (see Graph 1).

Despite the growing importance of cross-border operations, the bulk of M&A operations still have a Member State dimension, indicating that the restructuring has taken place, at least initially, through changes in the domestic market structure. For the EU 15 over the period 1990-95, more than 70% of all operations were domestic, a proportion roughly equivalent to that over the period 1986-90.

The domestic nature of the restructuring process is especially significant in countries such as Germany, Spain and Italy and, in general, it is a feature of the largest economies in the Union (Table 2). Small open EU economies tend to have a larger share of cross-border M&As. This is particularly true for Austria and Ireland. As mentioned before, cross-border M&As are increasingly Community M&As (18.7% between 1990 and 1995). Operations involving firms from the rest of the world continue, however, to be important in countries such as the U.K., Ireland, Sweden and Austria.

The extent of industry restructuring that has taken place over the period of implementation of the SMP varies across Member States. This may be due to a differential effect of the SMP but, to a large extent it is related to differences in financial and regulatory systems across the Community. Among the large economies in the Union, restructuring through M&As has been particularly important in the UK, while Italy and Spain have registered a low level of operations given the importance of their economies.

Table 1

Share of worldwide M&As

(percentage of total value)

	1985-87	1988-90	1991-93
Intra-European	9.9	22.8	28.8
Extra-European	9.7	15.0	14.0
European total	19.6	37.8	42.8
US domestic	68.0	44.3	35.4
US cross-border	12.0	15.7	11.7
US total	80.0	60.0	47.1
All other	0.3	2.2	1.1
Global / Total	100.0	100.0	100.0

Source: EAG. Based on Smith and Walter (1994).

Table 2

Mergers and acquisitions in the EU, by nationality of partners

(In percentage points)

	Operations							
	National		Community		International		Total	
	1990-95	1986-89	1990-95	1986-89	1990-95	1986-89	1990-95	1986-89
Belgium	60.2	60.4	31.9	34.8	7.9	4.9	100.0	100.0
Denmark	67.0	41.7	22.0	40.6	11.0	17.7	100.0	100.0
Germany	79.5	72.9	12.3	18.7	8.2	8.4	100.0	100.0
Greece	73.1	0.0	19.2	0.0	7.7	100.0	100.0	100.0
Spain	80.9	74.6	11.5	23.9	7.6	1.5	100.0	100.0
France	66.0	60.7	24.5	26.7	9.5	12.6	100.0	100.0
Ireland	36.9	19.9	49.0	58.1	14.1	22.0	100.0	100.0
Italy	77.8	74.9	14.9	18.6	7.3	6.4	100.0	100.0
Luxembourg	2.0	5.3	86.1	89.5	11.9	5.3	100.0	100.0
Netherlands	57.9	57.0	30.5	30.1	11.7	12.9	100.0	100.0
Austria	22.4	30.4	65.7	56.5	11.9	13.0	100.0	100.0
Portugal	64.9	0.0	35.1	100.0	0.0	0.0	100.0	100.0
Finland	78.8	65.8	14.4	23.0	6.8	11.2	100.0	100.0
Sweden	56.8	47.2	29.4	34.9	13.7	17.9	100.0	100.0
United kingdom	73.8	75.1	12.9	9.0	13.3	15.9	100.0	100.0
Total	70.8	70.1	18.7	15.5	10.5	14.4	100.0	100.0

Source: DG II, AMdata.

Box 1: The single market programme and European restructuring

The single market programme was expected to lead to a substantial upheaval in European industry. As the *ex-ante* analysis put it: 'The increased dynamism of the competitive process will ... prompt the restructuring and multinationalism of companies, lead to relocation, disengagement and "creative destruction"' (*European Economy*, 1988, p. 138).

Faced with a drastic change in competitive conditions in product and service markets, firms can adjust their strategies by processes of internal and external change. Restructuring can thus take place through internal change when firms expand or contract their activities adjusting to new market circumstances, or when firms enter and exit industries. External growth will occur when companies react to the changing market conditions by acquiring on-going concerns, or by disposing of parts of firms and other types of assets, through mergers and acquisitions, divestitures and other financial restructuring processes.

Several reasons explain why a significant part of the restructuring process has taken place in the EU through mergers and acquisitions.[1] First, the need for a rapid adjustment to the changed market environment, which made it difficult to pursue strategies based on internal expansion; second, the increased breadth and liquidity of European capital markets, particularly on the Continent, and third, the increased efficiency of European capital markets as the effects of deregulation were being felt across Europe, with more transparent information, more companies being quoted in exchange markets and an increasing role of institutional investors; all of these factors promoting the development of a more effective market for corporate control. Finally, the empirical evidence shows[2] that restructuring through the entry and exit of firms constitutes a limited instrument for restructuring, possibly important only in infant industries

[1] One should bear in mind, however, that not all M&As involve restructuring processes as remarked by Neven and Vickers (1992).

[2] See Geroski (1992) and (1995).

Table 3

Breakdown by Member State of cross-border M&A operations and GDP, 1990-95

	Domestic	Target	Bidder	GDP
Belgium	1.8	5.0	2.9	2.9
Denmark	4.0	3.9	4.8	2.0
Germany	23.0	25.5	14.4	24.7
Greece	0.1	0.4	0.1	1.2
Spain	2.6	8.1	1.5	7.3
France	14.8	13.8	18.5	17.7
Ireland	0.7	0.9	2.9	0.7
Italy	6.2	6.9	4.3	16.2
Luxembourg	0.0	0.6	1.0	0.2
Netherlands	5.1	7.5	9.1	4.3
Austria	0.2	1.3	1.7	2.4
Portugal	0.1	1.2	0.1	1.0
Finland	6.1	3.1	4.0	1.8
Sweden	4.4	4.5	8.2	3.3
United Kingdom	30.8	17.5	26.5	14.3
EUR 15	100.0	100.0	100.0	100.0

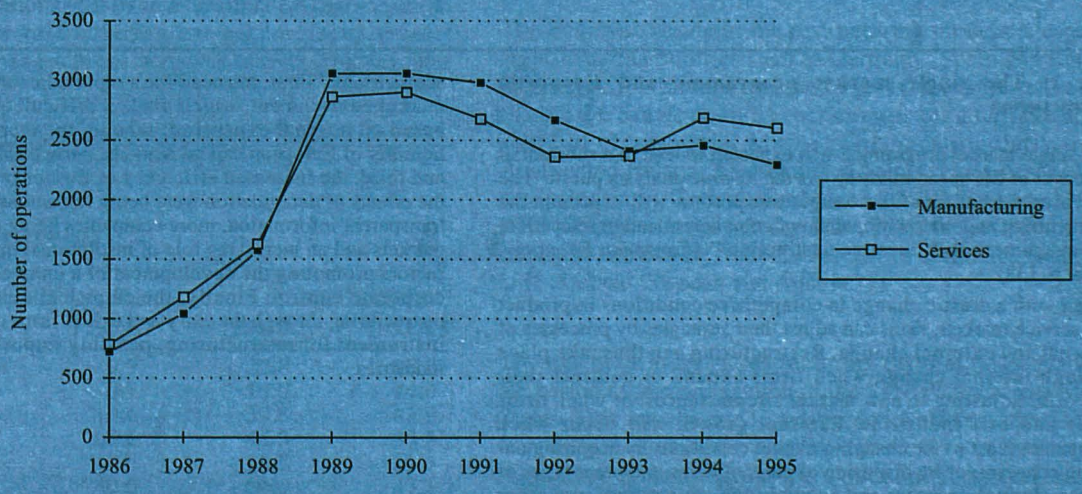
Source: AMdata and DG II.

It is also interesting to note that companies from the Nordic countries, the Netherlands, France and the UK have taken predominantly a bidding role in the M&A process, while companies in countries such as Italy, Spain and Germany have usually been the targets of acquisitions (Table 3).

At the sectoral level, restructuring has taken place both in manufacturing and in services. Manufacturing was the most active sector over the period 1988-92, possibly even in anticipation of the removal of NTB restrictions; in the latter period, 1993-95, the lead has been taken by services, in accordance with the delayed introduction of SMP measures in these sectors. Between 1986 and 1995 the number of operations has grown from 720 to 2 296 in manufacturing, and from 783 to 2 602 in services (see Graph 2).

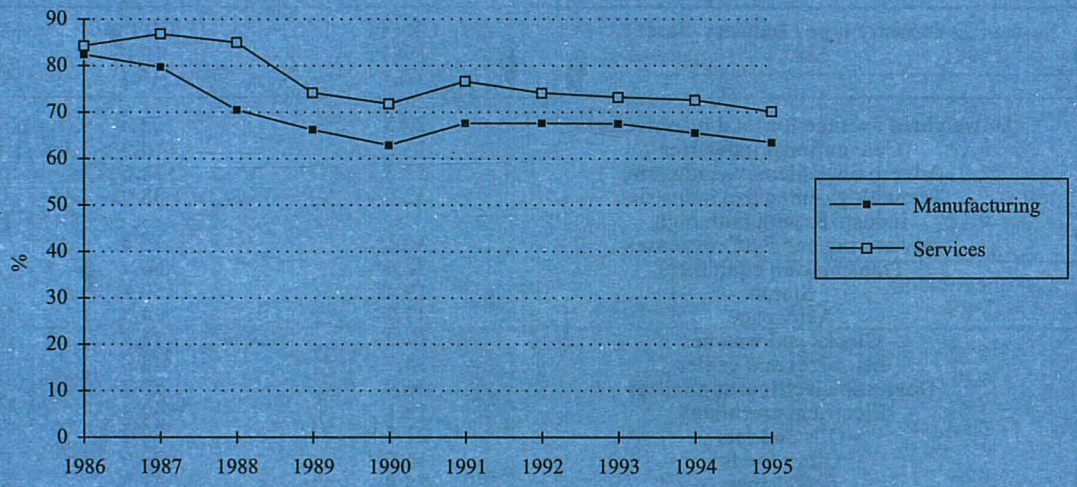
The importance of domestic operations in the M&As process is particularly significant in the case of services, where institutional restrictions may have prevented the extent of intra-European cross-border operations which has been observed in manufacturing. In 1995, 70% of all deals were domestic in services, and the figure was 63.5% in manufacturing. Incomplete adoption of SMP regulations in services could therefore prevent some beneficial cross-border restructuring in

GRAPH 2: **M&A in the EU by industry**



Source: DG II, AMData.

GRAPH 3: **Share of domestic M&A by industry**



Source: DG II, AMData.

these sectors (for example, in the banking and transportation sectors) (see Graph 3).

M&A activity has thus been a very important channel through which European firms have adapted their strategies and redeployed their resources as a reaction to and in preparation for the new competitive environment created by the gradual implementation of the SMP. M&As have allowed the external firm growth and the internal restructuring demanded by the new post-SMP scenario. We will review next how this has translated into changes in market structure and efficiency.

5.2.2. Concentration

In manufacturing sectors, the restructuring process has led to substantial changes in the concentration of European industry. Data analysis seems to indicate that concentration has increased significantly at EU level, but that this has been coupled with a reduction or stabilization of national concentration[1] ratios, with the exception of Germany and advertising-intensive sectors.

For the average industry at EU level, the share of total sales by the leading four firms has increased from 20.5 to 22.8% between 1987 and 1993, but many industries have experienced increases larger than five percentage points (Table 4). These levels of concentration are still well below those achieved in the US, an economically integrated area of a size comparable to the EU. As indicated by Lyons and Davis (op. cit.) it is hard to compare concentration ratios between the EU and the US due to the lack of concordance of statistical classifications. Nevertheless, these authors estimate that EU concentration in 1987 was about 14 points below that of the US. That would mean that the 2.3 points increase registered between 1987 and 1993 is still a small step towards comparable levels of concentration.

The most significant increases have taken place in industries related to public procurement, (in telecommunications —wires and cables, transmission equipment or transportation — aerospace, rail stock), in food sectors sensitive to the SMP (pasta, starch, oils and fats) and in other sectors such as electrical machinery, domestic electrical appliances and measurement equipment.

Overall, the trend towards the increase in concentration at EU level is especially significant in technologically-intensive industries (see Box 2 for a definition of industries comprised in this group). These are industries where the efficiency gains of an enlargement of market size and an increase in scale are

[1] As indicated below, the date for national concentration refers to Germany, France, the UK and Belgium.

Table 4

The evolution of concentration at the European Union level

NACE code	Industry type / Industry class**	CR4 in 1987 (%)	CR4 in 1993 (%)	Change in CR4
	Unweighted average for total manufacturing*	20.5	22.8	2.3
	Conventional industries	13.2	14.4	1.2
	Advertising-intensive industries	22.3	23.6	1.3
	Technology-intensive industries	32.9	38.9	6.0
	Industries with both high advertising and R&D expenses	30.1	32.4	2.3
326	Transmission equipment	30.6	64.1	33.5
418	Starch	19.4	50.1	30.7
346	Aerospace	47.7	64.3	16.6
374	Clocks and watches	17.2	31.7	14.5
341	Ins. wires and cables	34.7	48.9	14.2
346	Domestic electrical appliances	36.9	50.5	13.6
342	Electrical machinery	13.1	22.8	9.7
411	Oils and fats	21.7	30.2	8.5
423	Other foods	14.6	20.9	6.3
428	Soft drinks	25.8	31.8	6.0
371	Measuring instruments	9.3	15.3	6.0
417	Pasta	22.3	28.2	5.9
362	Rail stock	45.5	50.9	5.4
221	Iron and steel	34.5	39.8	5.3
372	Medical instruments	24.3	29.2	4.9

Sectors excluded for lack of data: 223, 224, 246, 255, 256, 259, 313, 314, 322, 328, 353, 373, 441, 442, 456, 461, 462, 463, 464, 465, 466, 467, 473, 481, 483, 492, 494, 495.
Total number of sectors included: 71
* = NACE codes 2 to 4. ** For definition of industry type see Box 2.
Source: EAG; data by Davies & Lyons, revising estimates published in Davies & Lyons (1996).

particularly important, and seem to have been reaped by the leading firms.

The increase of six points in EU-wide concentration in technology-intensive industries registered between 1987 and 1993 is also remarkable because, according to the data presented by Lyons and Davis (*op. cit.*), the concentration gap between the EU and the US was smallest precisely in this type of industry. According to their estimates, the difference of concentration was 4.8 percent points.[1]

[1] Davies and Lyons estimate that the difference in concentration ratios is 13.5 in traditional sectors, 14.7 in advertising-intensive sectors, 4.8 in technology-intensive sectors, and 9.6 in sectors intensive both in advertising and R&D. A simple comparison with the changes reported in Table 4 shows that R&D-intensive industries appear to have already concentration levels comparable to those in the US, while the difference is still very large in conventional and advertising-intensive industries.

In industries where advertising, brand name and marketing are important (which we call advertising-intensive — see Box 2) the increase in EU-wide concentration is more moderate, and concentration is increasing fundamentally at the national level, suggesting the predominance of domestic restructuring (Table 5). This is consistent with the characteristics of this type of industry where the diversity of preferences and distribution channels across the EU might still partially be segmenting national markets. Leading firms do deploy their marketing skills Europe wide, but most of the augmented concentration is the result of increasingly concentrated domestic markets. In this type of industry, the average share of the four leading firms goes up between 1986 and 1992 by 2.9 percentage points in Germany, by 1.3 points in France and by 3.2 points in the UK.

These national concentration trends in advertising-intensive industries (see Box 2) such as food products, consumer

Table 5

The evolution of concentration (CR4) at Member State level

Industry class *	France 1985	France 1992	France Difference	United Kingdom 1985	United Kingdom 1992	United Kingdom Difference
All sectors	34.4	34.3	–0.1	42.8	41.9	–0.9
Conventional industries	28.0	28.4	0.4	38.1	35.7	–2.4
Advertising-intensive industries	37.9	39.2	1.3	54.7	57.9	3.2
Technology-intensive industries	48.2	47.0	–1.2	43.3	42.5	–0.8
Industries with both high advertising and R&D expenses	35.0	33.3	–1.8	51.0	52.9	1.8

Industry class *	Belgium 1985	Belgium 1992	Belgium Difference	Germany 1985	Germany 1992	Germany Difference
All sectors	54.5	52.8	–1.7	34.0	35.9	1.9
Conventional industries	48.4	47.0	–1.4	28.0	30.9	2.9
Advertising-intensive industries	55.9	55.5	–0.3	35.7	36.9	1.2
Technology-intensive industries	68.1	62.8	–5.4	42.4	42.0	–0.4
Industries with both high advertising and R&D expenses	57.6	60.9	3.3	46.1	48.0	1.9

* = Unweighted means.
Source: EAG.

Box 2: Manufacturing sectors: The nature of competition and the impact of market enlargement

Following Sutton (1991) and Davies, Lyons et al. (1996) we distinguish between manufacturing sectors with exogenous and endogenous fixed (and sunk) costs.

In sectors with exogenous fixed costs, firms enjoy economies of scale based on production. High fixed costs imply that unit costs fall with the size of production runs. However, these are fundamentally engineering or technical scale economies, which cannot be altered by firms. As the market size grows, the minimum efficient scale becomes smaller relative to the size of the market and the degree of concentration diminishes. In industries of this kind (for example, shipbuilding, cement, carpets, leather, wood products, wool and cotton, iron and steel, metal products) products are homogeneous or horizontally differentiated and competition is based fundamentally on price. For the sake of simplicity we will name these industries as conventional.

In sectors with endogenous fixed costs the economies of scale are related to fixed spending by firms in outlays such as research and development (development of new products and processes) and advertising (establishment of brand names and reputation). These fixed outlays also generate reductions in unit costs as production increases. However, these economies of scale are reaped at firm level, as the specific assets developed by the firm are deployed across several plants and subsidiaries. Moreover, these fixed costs (and the extent of scale economies) are endogenous, to the extent that R&D and advertising spending become strategic tools used by firms with the objective of improving their market position. This is possible because in these markets R&D and advertising leads to what is known as vertical differentiation: differentiation through perceived or actual changes in quality. In these markets increased spending in research and development or advertising alters consumers' willingness to pay and, consequently, improves the market share of the investing firm. Thus, fixed outlays in R&D and advertising become endogenous.

In markets characterized by endogenous fixed costs, increase in market size will not be associated with increased fragmentation. On the contrary, some firms will anticipate the change in market size and incur fixed costs which will improve their market share and contribute to increased market concentration.

Examples of markets with high levels of outlays in R&D are basic chemicals, industrial and agricultural chemicals, machine tools, telecommunication equipment, office machinery, electrical machinery and aerospace. Industries intensive in advertising are basically related to the food industry (confectionery, beer, soft drinks, tobacco). Finally, some industries are intensive in both R&D and advertising (i.e. pharmaceuticals, soaps and detergents, domestic electrical applicances, radio and television, motor vehicles). These three types of industries will be respectively, technology-intensive; advertising-intensive, and, finally, those which are both advertising- and R&D-intensive.

The distinction between industries with exogenous and endogenous fixed costs has implications also in terms of the potential for price convergence (see Box 4 below). Markets with endogenous fixed costs are usually those where vertical differentiation is pervasive. In such markets, even in the absence of artificial or strategic barriers to trade, a substantial level of price dispersion may be observed. Thus, in those markets the absence of price convergence is not a reliable indicator of market segmentation.

chemicals, consumer electronics and motor vehicles are noteworthy given the overall tendency to a slightly declining concentration of the average industry in France, Belgium and the UK (together with Germany, the only EU countries for which this information was available on a systematic basis). Over this period, only Germany has experienced a tendency towards increasingly concentrated industries. Such a tendency is at the root of the increasing gap between the average size of manufacturing firms in Germany and the size of firms elsewhere in the EU, a remarkable evolution to which we will turn later on.

As for market services, the impact of the SMP on concentration has been very much affected by the nature of each service. Sectors such as distribution and road freight transport —which were highly sensitive to the SMP but have relatively light regulation— have registered substantial restructuring, involving both domestic and EU increases in concentration. The improved efficiency of these sectors has had a significant effect, upstream, on manufacturing industries and, downstream, on final consumers, to the extent that significant cost reductions in distribution have been achieved (Table 1 above).

In road freight transport the industry has segmented, with an increase in large and small specialized competitors, and a declining share of intermediate firms. In distribution, the increased EU-wide concentration of manufacturers and retailers has reduced the market share of wholesalers. New firms which provide logistic services throughout the distribution chain have gained substantial ground in the industry.

Highly regulated services, with large potential gains from scope and network economies (economies tied to the simultaneous exploitation of several businesses or a distribution network) such as telecommunications, airlines or retail banking, have observed smaller increases in EU-wide concentration. Quite often, due to institutional constraints, the benefits that can be derived from a wider EU market have been exploited by alliances and not by M&As. Increased concentration has been observed only at the domestic level, selectively and very much depending on the extent to which some of these sectors had restrictions on entry before the implementation of the SMP. For example, the market share of the leading firms has increased slightly in banking, while it has declined in airlines and telecommunication services, where entry regulations have kept artificially high concentration ratios.

5.2.3. Firm size and efficiency

It is important to ascertain the extent to which the restructuring process triggered by the SMP has been used by firms as an intermediate step, with the final objective of exploiting the cost reductions generated by the increased scale and scope of their activities. Moreover, it is also very important to ensure that the increased concentration generated by this industrial restructuring has not undermined the competitive forces unleashed by the SMP, and thus prevented a translation of the cost reductions into lower prices to consumers and downstream users. The competition effects will be discussed in section 5.3 and this subsection will focus on the efficiency gains.

The productive efficiency effects of an integration process such as the SMP cover a wide range of economic phenomena. They include, first, the elimination of technical inefficiencies. These inefficiencies involve the misuse of technical and human resources due to the existence of low competitive pressures and managerial slack (what is known as X-inefficiency). Second, the cost reductions arising from the increased exploitation of economies of scale and scope, as the market is expanded through integration. Scale and scope economies may arise at the plant level (production scale economies), or may be linked to other functions within the firm and to assets which are shared at the firm level (economies linked to R&D and advertising, for example).

Other efficiency gains may be related to economies that are external to the firm, arising at the level of regions and nations when, for example, firms enjoy technological spillovers or share access to specialized inputs. Finally, the SMP may have a dynamic efficiency effect, changing the incentives to undertake R&D, the rate of adoption of new technologies or increasing the benefits of learning-by-doing processes by EU firms. Cost reductions through the elimination of technical inefficiencies and the achievement of larger scale will be the focus of this subsection.

A key distinction has to be drawn between those sectors in the economy which are directly influenced by increased (potential) trade — the tradables sector which we approximate by manufacturing — and the rest of the economy —fundamentally service industries— where the enlargement of the market takes place through the possibility of expansion by establishment in foreign markets. In both cases increased competitive pressures may reduce X-inefficiencies. The potential for scale economies is likely to be more important in manufacturing. In the case of services, however, scale and scope economies at the firm level might also be reaped as firms deploy their intangible assets abroad through subsidiaries.

This section will analyse both the manufacturing and the service sectors. In the case of manufacturing, the analysis will focus on the examination of the evolution of firm size. Thus, a direct estimation of changes in production functions or movements along the cost curves is not undertaken. The background studies have not attempted to provide empirical evidence on the existence of unexploited scale economies. Nor have they attempted to analyse the extent to which some firms may have adjusted to the SMP by reorganizing their production across plants. This is a very difficult exercise, which has been partially attempted elsewhere and has provided overall

inconclusive results.[1] We will therefore focus on a simple descriptive analysis of the determinants of changes in firm size. Such changes are not related to efficiency gains in a simple way, but provide an intuitive description of how the SMP has affected an easily observable measure of economic structure.

Moreover, modern developments in the theoretical and empirical analysis of the relation between the nature of competition and the impact of market enlargement[2] show the increasing importance of scale and scope economies linked to endogenous fixed costs such as those incurred through R&D and advertising competition. These economies of scale and scope are obtained at the firm level and, for many industries, are more important than purely technical production returns to scale which arise at the plant level.[3] For this kind of potential efficiency gains, the firm constitutes the correct level of analysis. Although the conventional approach to scale and scope economies already contemplated the role of economies arising at the firm level (and these were adequately treated in the Cecchini report), recent theoretical and empirical work has brought these issues into the main focus of analysis.

In the case of services, the analysis will be based on the sectoral studies undertaken in the context of the SMP exercise and will cover a limited but representative array of sectors.

The restructuring process that has taken place throughout the European economy via M&As should have implications not only for concentration, but also in terms of the size of the representative firms in the industry. However, average firm size is an indicator which has to be interpreted with great caution. It is the result of two opposing trends. Average firm size may be unchanged or increase only as a result of a positive effect on average size through mergers and acquisitions, and a tendency towards a reduced average size, as a more dynamic marketplace promotes the entry of new firms. Both opposing tendencies would be consistent with a satisfactory restructuring of the economy. Assessing these two tendencies would require information on entry, exit and size distribution. However, consistent data on these variables for the main countries in the EU is not avalaible. Additionally, data on the distribution of firms by size is not gathered on a consistent and timely basis, and even simple information on average firm size is only available with a long time delay. As a consequence, the results of the analysis on firm size, although informative, should be interpreted with caution.

Manufacturing

One of the remarkable facts of the European manufacturing sector is the significant difference between the average size of firms in the leading industrial Member State, Germany, and other main industrial countries such as France or the UK. In 1985, the gross value added per firm in Germany was ECU 7.4 million (1990 prices), while in the other two countries was one third below that figure. The data show that manufacturing firm

Table 6

The evolution of firm size in manufacturing*

	1985	1992	Percentage change
Gross value added (GVA)**			
Germany	235 711	299 980	27.3
France	127 653	142 152	11.4
Italy***	102 131	124 895	22.3
United Kingdom	123 681	130 385	5.4
EUR 4***	589 136	697 412	18.4
Number of companies			
Germany	31 718	34 987	10.3
France	26 046	26 941	3.4
Italy***	30 717	32 521	5.9
United Kingdom	25 886	27 342	5.6
EUR 4***	114 367	121 791	6.5
GVA per company			
Germany	7.4	8.6	15.4
France	4.9	5.3	7.7
Italy***	3.3	3.8	15.5
United Kingdom	4.8	4.7	–0.2
EUR 4***	5.15	5.72	11.1

* Defined as Chapters 2, 3 and 4 for NACE, excluding Chapters 21, 23 and adding sectors 1200, 1400 and 1520.
** 1990 prices mio. ecu.
*** Data for Italy corresponds to 1991.
Note: Germany includes only West Germany for both 1985 and 1992.
Source: VISA/DEBA and DG II.

[1] Caves and Barton (1990) and Caves et al. (1992) have analysed the extent of X-inefficiency in industrialized economies and whether this inefficiency is related to the degree of trade liberalization. Caves and Barton work with US manufacturing data and find that imports as a percent of total supply is a significant determinant of technical efficiency when domestic producers are concentrated. The effect is, however, small. An increase in import competition by one standard deviation (10 percentage points in the imports/supply ratio) raises industry efficiency by only 0.02 standard deviations. The studies reported by Caves (1992) referred to Japan, Korea, Australia, Britain and Canada and only confirm this finding in the case of the United Kingdom. Some of the research yields a negative relationship between import competition and technical efficiency. These inconclusive results are not very different from the ones found in the literature that analyses the impact of trade liberalization on productivity growth (see, for example, Harrison, 1994).

[2] Sutton (1991) and Davies and Lyons (1996).

[3] Early commentators of the Cechinni report (see for example Davis et al. 1989) rightly argued that for many European manufacturing industries, the scope for increased exploitation of technical scale economies was rather limited. In this view, the main gains from the SMP were to arise from increased product diversity, which need not necessarily be associated with restructuring and increased firm size. However, to the extent that competition through product differentiation and product innovation involves endogenous sunk costs increased firm size and augmented concentration for some type of industries may in fact be a consequence of the SMP.

size in the largest EU countries increased between 1985 and 1992 by between 8% in France and 15% in Germany and Italy. Of the main EU economies only the UK did not experience an increase in firm size. The overall increase over the period was 11% for the EU 4 economies.

This means that after the implementation of the SMP, this structural characteristic of the European manufacturing sector has remained unaltered. If anything it has been reinforced given the comparatively weak growth of firm size in France and, in particular, in the UK (Table 6).

At the sectoral level, the large size of German firms is particularly significant in motor vehicles, chemicals and engineering industries, but also in more traditional industries such as textile and timber. Over the period of implementation of the SMP, the size gap has increased in sectors such as office machinery, measurement equipment and transportation equipment; but also in the food, textile and clothing industries.

There seems to be no differential effect of the SMP in terms of the impact on firm size across sectors. The stronger growth in firm size is actually in the set of industries which were not SMP-sensitive. The sectors where the SMP was supposed to have a stronger impact had already a larger firm size, and growth has lagged behind (Table 7).

Changes in firm size have therefore not been fundamentally linked to the impact of the SMP, but rather to the nature of competition in each industry. Strong growth of average firm size has been detected in advertising-intensive industries in all the four main EU countries (Table 8). This trend is consistent with the data on national concentration and confirms that, in these industries, firms are increasing their size, so that they can reap the scale economies linked to the creation of strong brand names, new product development and heavy up-front advertising investments.

The performance of sectors where R&D is important has not been as impressive in terms of the size of the average firm but, as argued above, the data on concentration indicates that R&D-intensive industries have also taken advantage of the EU market dimension and have spread their large up-front fixed R&D costs across the Community. In sectors where scale economies are linked to establishment size (technical production economies) we also observe an increase in the average size of firms. However, there is no systematic evidence that firms have indeed profited from the SMP by reorganizing production across Europe and increasing the size of their establishments.

The general results stemming from an analysis of the simple summary data presented in the previous tables are confirmed by

Table 7

Average firm size and sensitivity to the SMP

Industry class *	Germany 1985	Germany 1992	Percentage change	Italy 1985	Italy 1992	Percentage change
Sensitive sectors**	11.5	13.3	15.5	3.9	4.4	12.3
Non-sensitive sectors	5.1	6.1	19.5	2.8	3.2	16.5
All manufacturing sectors	7.4	8.6	15.4	3.3	3.8	15.5
Industry class *	**France 1985**	**France 1992**	**Percentage change**	**United Kingdom 1985**	**United Kingdom 1992**	**Percentage change**
Sensitive sectors**	7.3	7.5	2.8	5.7	5.9	3.0
Non-sensitive sectors	3.5	4.0	13.4	3.7	3.5	–4.0
All manufacturing sectors	4.9	5.3	7.7	4.8	4.7	–0.2

* = As defined in Buigues et al. (1990). Data in 1990 mio ecu.
** = Data for Italy corresponds to 1991.
Source: VISA/DEBA and DG II.

Table 8a

Average firm size and industry growth by class of industry*

Industry class *	Germany 1985	Germany 1992	Germany Percentage change	Italy 1985	Italy 1992+	Italy Percentage change
Conventional industries	4.4	5.2	20.0	2.3	2.6	14.6
Advertising-intensive industries	5.5	8.6	55.9	3.8	5.4	40.1
Technology-intensive industries	12.2	13.1	7.7	5.4	6.0	9.7
Industries with both high advertising and R&D expenses	38.6	43.1	11.9	9.9	11.1	11.7

Industry class *	France 1985	France 1992	France Percentage change	United Kingdom 1985	United Kingdom 1992+	United Kingdom Percentage change
Conventional industries	3.0	3.2	7.9	3.2	3.2	3.0
Advertising-intensive industries	5.4	7.4	36.2	8.4	10.8	27.7
Technology-intensive industries	10.1	9.4	-6.9	6.4	5.5	-14.0
Industries with both high advertising and R&D expenses	11.9	13.8	16.1	8.9	11.9	33.2

Industry class *	EUR 4 1985	EUR 4 1992	EUR 4 Percentage change
Conventional industries	3.2	3.6	13.0
Advertising-intensive industries	5.6	7.8	38.6
Technology-intensive industries	8.8	9.1	3.3
Industries with both high advertising and R&D expenses	16.0	18.0	13.7

* = As classified in Box 2. Data in 1990 mio ecu.
+ = Data for Italy corresponds to 1991.
Source: VISA/DEBA and DG II.

the econometric study undertaken by EAG (see Annex 1). The econometric tests reveal no significant impact of the SMP on firm size, and highlight the importance of industry-type specific effects.

The evolution of firm size across the different Member States is, of course, not unrelated to the evolution of concentration data which has been analysed above. That relationship is made clear in Table 9. As expected, in conventional industries and technology-intensive industries where national concentration falls or is stable, industry size grows ahead of firm size. The evolution of EU-wide concentration is, however, markedly different, possibly reflecting the increased multinationalization of technology-intensive sectors. In industries where advertising is important, firm size grows faster than industry size. National concentration increases slightly (Annex 2 provides some detail on the formal relation between EU-wide concentration, national concentration and other structural market characteristics).

The efficiency gains associated with the implementation of the SMP in manufacturing have also been confirmed by the perception of firms, as reflected in the Eurostat business survey. Overall, large firms seem to have benefited the most from the reduction in unit costs associated with the SMP (Table 10). According to this survey, the gains in unit costs were mostly due to reduction in the costs of raw materials (new sourcing opportunities), production and distribution costs (Table 11).

Table 8b

Firm and industry growth by class of industry

Industry class	Germany	France	Italy	United Kingdom
		Growth in industry size (1985-92) (percentage change)		
Conventional industries	30.4	10.9	20.7	2.1
Advertising-intensive industries	44.8	26.1	21.9	5.7
Technology-intensive industries	27.7	6.1	24.3	–3.7
Industries with both high advertising and R&D expenses	14.9	16.2	17.1	33.5

	Industry size(*) (EUR 4)		
	1985	1992	Percentage change
Conventional industries	242 676	28 705	18.5
Advertising-intensive industries	34 868	43 774	25.5
Technology-intensive industries	197 015	232 481	18.0
Industries with both high advertising and R&D expenses	83 828	98 500	17.5

(*) Industry size data in million ecu. 1990 prices.
Source: VISA/DEBA and DG II.

Table 9

Changes in size and concentration by class of industry

Industry class	Growth in size 1985-92 (in %)*		Concentration			
	Firm	Industry	Mean national change (in %) (C4 Nat)		EU level (in %) (C4 EU)	
			1986-92	1987	1993	Difference
All sectors	—	—	–0.1	20.5	22.8	2.3
Conventional industries	10.4	16.0	–0.3	13.2	14.4	1.2
Advertising-intensive industries	40.0	24.6	1.3	22.3	23.6	1.3
Technology-intensive industries	–0.9	13.6	–1.9	32.9	38.9	6.0
Industries with both high advertising and R&D expenses	18.2	20.4	1.3	30.1	32.4	2.3

* Simple mean of national averages (Data for Italy corresponds to 1985-91).
Source: EAG and DG II.

Table 10

Perceived effect of the single market programme on unit costs in manufacturing

(Percentage of enterprises expressing opinion)

	Reduction in unit costs	No change	Increase in unit costs	Don't know
EUR 12	15	53	14	18
By employment size class				
20-49	12	51	17	21
50-199	16	56	13	15
200-499	22	57	9	12
500-999	21	53	8	18
Larger than 999	26	55	7	12

Source: Eurostat.

Table 11

Perceived importance of unit costs changes in manufacturing by cost category

(Percentage of enterprises expressing opinion)

Category	Important	Not important	Don't know
Production process	22	33	44
Testing and certification	19	37	44
Distribution costs	21	35	44
Marketing costs	15	41	44
Cost of raw materials	30	26	44
Banking costs	17	40	44
Insurance costs	14	42	44
Other cost sources	4	24	71

Source: Eurostat.

Services

Efficiency gains in service sectors linked to the SMP have been harder to detect due to the nature of service activities and the problems measuring outputs and inputs in these sectors[1] (refer to Gordon (NBER paper 1996) and Baily (BPEA, 1995); as well as OECD).

In sectors such as distribution and road freight transport, some relevant indicators show remarkable gains in productivity. For example, improvements in the distribution sector have meant that over the period 1987-93 logistic costs as a proportion of total revenue for a large sample of 1 000 European large firms declined by 30%. Other gains have accrued in terms of a reduction in the number of days between order placement and shipment receipt (from 21 to 15 days) and in terms of an increased quality of service (a decline of 31% in the service failure rate). In road freight transport, the SMP has reduced the cost of cross-border transport by an estimated 6%. Nevertheless, the harmonization requirements imposed by the SMP in this sector have also led to cost increases with an overall increase for international transport which ranges between 1% and 2.5%.

Productivity and efficiency gains in the more regulated sectors (telecommunications, banking, airlines) have been less pronounced, and in general, the extent to which the observed changes are linked to the SMP is very uncertain. Large gains have been observed only in liberalized telecommunication services. In this case, the SMP has indeed promoted rapid technological change (for example, in cellular telephony through the adoption of the GSM standard), the main source of efficiency gains in such a dynamic sector. In airlines and banking the evidence is less comforting. In airlines, labour productivity has increased ahead of labour costs, although this is basically due to the reduction of the labour force directly employed by airlines. In banking, no significant improvements in productivity or efficiency are reported. Staff costs in banking have declined but these reductions may have been compensated by increases in non-staff costs related to investments in information technology. These trends, however, do not appear to be the direct result of the SMP measures adopted in the field of banking.

5.3. The competitive conditions in European markets

The removal of barriers to trade leads to what Krugman and Venables (1993, p. 3) describe as 'a reduction in the cost of doing business across space'. Measures aimed at fostering competition and promoting market integration affect the cost of selling in foreign markets in two different ways:

- They reduce the firms' fixed costs of entering foreign markets. For example one such fixed cost would be registering car models to check they comply with national technical and safety standards.
- They reduce the variable cost of supplying goods and services to other markets. Examples are border costs which arise from the requirement that goods have to be checked at the border (for reasons of taxation, as well as to uphold national health regulations and trade policies against non-member countries).

[1] On the measurement problems see, for example, Gordon (1996).

Both types of cost reduction, fixed and variable, affect entry into a foreign market, although in different ways. The first type simply reduces (sunk) entry costs regardless of the scale of entry. The second type affects decisions to supply foreign customers in much the same way as a reduction in transport costs. More specifically, they reduce the costs that must be incurred in supplying a foreign customer relative to the cost of supplying a domestic customer at the same distance.

While tariff barriers almost always relate to a per unit or per value charge on imports, most non-tariff barriers imply a mixture of fixed entry costs and variable per unit cost. For example, adapting to different technical regulations on product packaging and marketing means that costs are higher for every unit sold in foreign markets, both because of higher fixed costs and higher variable costs.

Overall, a reduction in non-tariff barriers implies that competition is likely to increase because there is an increase in both the actual number of competitors and their price competitiveness. However, even if the number of competitors does not change significantly, the potential for entry may induce changes in behaviour and a more competitive environment.

Whether it is due to an increase in the number of competitors or to the threat of entry, the change in the competitive environment will translate into a combination of a reduction in mark-ups and a reduction in costs, where those were too high due to the presence of X-inefficiency or inefficiently small scales of operation.

The promotion of actual competition as a result of the SMP is particularly important since, as described above, the European economy has undergone a process of increased industrial concentration as a result of the SMP. Such increase in concentration and firm size could, however, result in reduced economic welfare if it were to stifle competition.

Additionally, competition could also be reduced by a strategic reaction of market players (firms or governments) that might try to adopt strategies and competitive behaviours that reduce or soften rivalry.

This section will first review the available evidence on the effect of trade and European integration on competition and will subsequently analyse the extent to which increased competition has been observed in EU industrial and services markets. The evidence on price-cost margins and business perceptions seems to indicate that the efficiency gains associated with large size have been translated to consumers and users by way of vigorous competition associated with the SMP.

5.3.1. Market integration and competition

The general principle that market integration leads to increased competition is broadly supported by the available empirical evidence. Before analysing the specific evidence on the SMP, this section reviews the main studies that have looked at this issue. First, on the more general question of the procompetitive effect of imports and trade liberalization. Second, on the more direct question of the effects of European integration on the extent of competition.

We must recognize at the outset that the assessment of the relationship between trade liberalization and competition is subject to daunting measurement problems. As shown by Bresnahan (1989) and others, assessing changes in the extent of competition requires the estimation of industry-specific structural models and, almost always, an impressive amount of firm-level data and sector-specific knowledge.

In the absence of this type of model[1] much of the evidence on this subject has been established by means of cross-section econometric analysis.[2] Most of the studies look at the relationship between profitability (as measured by accounting rates of return or price-cost margins (PCM)) and openness to trade. The main conclusion of this literature is that the ratio of imports to domestic consumption tends to be negatively correlated with the profitability of domestic sellers, especially when domestic concentration is high.[3]

Some recent research has looked at this issue within a structural framework. Levinsohn (1993) uses firm-level data and shows how mark-ups decrease when trade is liberalized. He estimates a transformation of a firm production function.[4] The OECD has recently followed a related approach. After estimating mark-ups for several manufacturing and services industries in some OECD countries, the estimated mark-ups are regressed on a series of structural and policy variables, which include the presence of non-tariff barriers (NTBs). These barriers emerge as a significant explanatory variable of mark-ups.

Within the context of European integration, the analysis using cross-section industry-level data was undertaken by Sleuwaegen and Yamawaki (1988) and Jacquemin and Sapir (1991).

Sleuwaegen and Yamawaki (1988) do not directly assess the effect of declining protection within the EU on a proxy for competition such as the PCM. Instead, they relate the PCM to

[1] See, however, Levinsohn (1993) and Allen (1994) below.
[2] These studies follow the tradition of the cross-section structure-conduct-performance paradigm analysis as summarized by Schmalensee (1989).
[3] See Schmalensee, (op. cit. p. 976) and the references cited therein.
[4] This follows the pioneering work of Hall (1989).

national and EC-wide measures of concentration and argue that the formation of the common market in the 1960s and 1970s led to an increase in EU concentration and increased PCM in the industries where trade liberalization progressed more.

Jacquemin and Sapir (1991) investigate directly the potential disciplinary role of imports in the EU by looking at the relationship between PCM and both intra-EU and extra-EU imports. They take into account the simultaneity problem (the fact that increased imports can cause a decline in PCM, but at the same time high PCM could lead to increased import penetration[1]) and find (with data corresponding to 1983 and 100 sectors) that only extra-EU imports exert a disciplinary effect on domestic competitors. They also find, however, that sectors with high NTB enjoy abnormally high profitability, which could be indicative of low competitive pressures.

[1] Allen (1994) estimates a model with sectoral data. He does not look at the disciplinary effect of imports but estimates a structural model which captures this simultaneity problem. His results confirm that domestic prices are influenced by import prices. This complements the traditional result —that domestic prices affect import prices— obtained in the pricing to market literature (see Goldberg and Knetter, 1996).

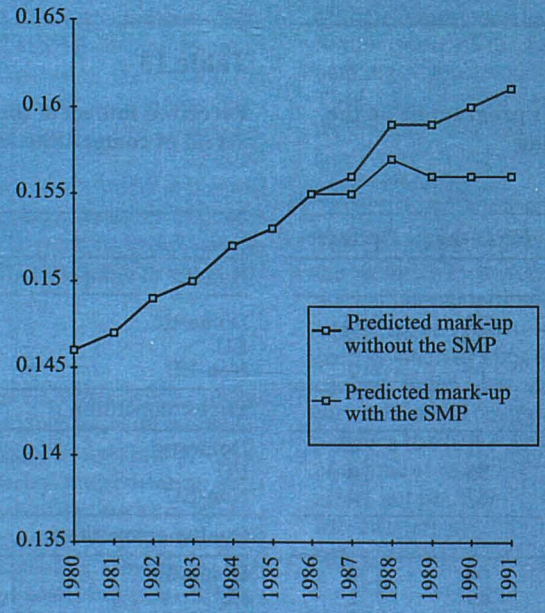
Overall, these results suggest that market integration may be conducive to increased competition, but that such a relationship might crucially depend on maintaining low trade barriers with countries outside the area proceeding to further integration.

5.3.2. Manufacturing

The implementation of the SMP has had a significant effect on the degree of competition in manufacturing sectors. This effect has been detected statistically by means of an econometric analysis of the evolution of manufacturing mark-ups between 1980 and 1992 (see Annex 3 and *London Economics* (1996) for details).

Over the period 1980-92, European manufacturing industry has registered a recovery of price-cost margins, at a yearly rate of 0.25 percentage points, controlling for the evolution of the economic cycle and the diverging industrial structures of the EU Member States. Within this overall trend, the statistical analysis of price-cost margins confirms that the implementation of the SMP has imposed increasing pressure on price-cost margins, thus ensuring that cost reductions have been passed on to consumers and downstream users. The data indicate that the

GRAPH 4: **The effect of the SMP on European manufacturing mark-ups**



Source: LE (1996).

SMP has led to a significant reduction in price-cost margins. Other things equal, the estimates indicate that the SMP yields a yearly reduction of 0.20 percentage points in margins as of 1987. If we take into account the evolution of other variables which affected margins over the period and the rest of parameter estimates obtained by *London Economics*, we can evaluate the *ex post* impact of the policy change on mark-ups. This is presented in Graph 4, where we observe that over the period 1987-91 the SMP policy resulted in a drop of mark-ups of 0.50 percentage points compared to what would have happened in an *anti-monde* without the SMP. The relative decline in margins triggered by the SMP has been particularly important in some of the manufacturing sectors most sensitive to the SMP (specifically, sectors which had moderate non-tariff barriers before the SMP, such as consumer electronics, motor vehicles, textiles and clothing) but also in sectors which were not particularly affected by the SMP. On the opposite side, the effect on some of the SMP-sensitive sectors (traditional or regulated public procurement markets such as pharmaceutical products and electrical equipment, etc.) does not appear to have been significant.

The increased competitive pressure revealed by margins data is confirmed by the perceptions of firms as reflected in the Eurostat business survey (Table 12).

5.3.3. Services

Competitive conditions in services have also been significantly altered by the SMP. A significant increase in competition is noticeable in sectors such as telecommunication services or retail banking, but also in airlines, where the implementation of the SMP has only been partial so far. Overall, however, the increase in competition seems to be less strong than in manufacturing sectors, reflecting that in services many regulations are still maintained and the SMP has not been fully implemented in several domains. This diffference in the reaction of manufacturing and services is also consistent with the results obtained by the business survey, and therefore, with the perception of firms (see Tables 13 and 14). These perceptions also indicate that the increased competitive pressures in services are mostly due to the behaviour of domestic competitors. This is in tune with the domestic nature of the restructuring provoked by the SMP, as highlighted above in the context of the analysis of M&As.

The change in the degree of competition in services has been prompted by new entry in certain markets (telecommunications, airlines) but also by the elimination of conduct regulations which restricted firm's marketing strategies (airlines, banking).

Table 12

Perceived impact of the single market programme on the extent of competition in manufacturing

(Percentage of enterprises expressing opinion)

	Increase	No change	Decrease
Number of competitors			
Domestic	25	64	11
EU	39	59	2
Non-EU	25	74	2
Price competition			
Domestic	44	51	4
EU	41	55	4
Non-EU	29	67	4
Quality competition			
Domestic	33	64	3
EU	29	69	2
Non-EU	18	79	3

Source: Eurostat.

Table 13

Perceived impact of the single market programme on the extent of competition in distributive trade

(Percentage of enterprises expressing opinion)

	Increase	No change	Decrease
Number of competitors			
Domestic	29	65	6
EU	32	67	1
Non-EU	9	90	1
Price competition			
Domestic	38	60	2
EU	29	68	3
Non-EU	11	85	4
Quality competition			
Domestic	28	69	3
EU	19	79	2
Non-EU	8	90	2

Source: Eurostat.

Table 14

Perceived impact of the single market programme on the extent of competition in other services sectors

(Percentage of enterprises expressing opinion)

	Increase	No change	Decrease
Number of competitors			
Domestic	30	63	7
EU	21	77	2
Non-EU	9	88	2
Price competition			
Domestic	37	60	3
EU	16	81	3
Non-EU	9	87	3
Quality competition			
Domestic	27	69	4
EU	14	83	3
Non-EU	8	89	3

Source: Eurostat.

Table 15

National State aid as a percentage of GDP

(Averages of yearly data)

	1981-86	1986-88	1988-90	1990-92
Italy	5.0	3.1	2.9	2.8
West Germany	2.1	2.5	2.4	2.4
France	2.1	2	1.8	1.8
UK	1.4	1.1	1.1	n.a.
Belgium	3.4	3.2	2.8	2.3
Netherlands	0.8	1.3	1.3	0.9
Ireland	2.5	2.7	2	1.5
Greece	1.1	4.5	3.1	2.2
Denmark	0.7	1	1.1	1
Luxembourg	6.0	4	4	3.9
Spain	n.a.	2.7	1.8	1.3
Portugal	n.a.	1.5	2.2	1.4
EC 12*	2.4	2.2	2	1.9

* Data for 1981-86 correspond to EC10.
Source: European Commission, reports on State aids (various years).

Increased competition has resulted in substantial and quite general price reductions in sectors such as telecommunications, and in a more selective decline of prices in segments of the airline and banking industries. In airlines, yields in real terms have declined between 1986 and 1994 by almost 20%, reflecting the fact that the increased availability of discount fares has promoted increased consumption, increasing the relative weight of discount fares compared to business fares which have not declined significantly. In banking, intermediation margins have also declined, reflecting increased competition in some of the segments of conventional retail banking markets (i.e. high-yield cheque accounts, etc.). Prices have declined for selected products such as credit cards, corporate loans and some deposit products in most EU countries.

In road freight transport, the margins for cross-border traffic have declined sharply over the period 1986-94, with an overall increase in costs of 22% and an increase in nominal prices in the range of 3-10%. The reduction in real transportation costs together with the efficiency gains in distribution have led to a substantial change in the sourcing patterns of manufacturing and retailing firms, which have increasingly considered EU-wide sourcing. This wider range of sourcing possibilities indicates that the decline in the cost of inputs is one of the key components of costs reductions due to the SMP, as reported by the business survey results.

Finally, competition in some of the service sectors has been distorted by the existence of restrictions which have prevented the adjustment of the market.[1] Even though the aggregate data on State aids (see for example Table 15) shows a steady decline of their importance in the economy for practically all Member States, some of the key service sectors —such as airlines or banking— are not included in those globally positive statistics. Thus, State aids and other government interventions or regulations may have prevented the complete restructuring of some service industries to the new competitive environment created by the SMP.

The pro-competitive impact of the SMP has expanded beyond the sectors which were targeted by the SMP measures. Through market interactions and strategic reactions by firms, changes in competitive conditions in one sector have spilt over related sectors, such as clients or suppliers. For example, SMP-driven changes in the glass sector have led to upstream restructuring in the soda ash industry; similarly, the liberalization of telecom services has had a profound impact on the telecommunications equipment market (see Box 3). This spreading of the SMP effect implies that the linkage between SMP sectoral sensitivity and changes in performance (i.e. prices) is not simple, as many non-sensitive sectors end up being affected by the SMP.

[1] Neven and Vickers (1992) discuss the potential restructuring delay that might be caused by State aids.

Box 3: The indirect effects of the SMP: The case of the telecommunications industry

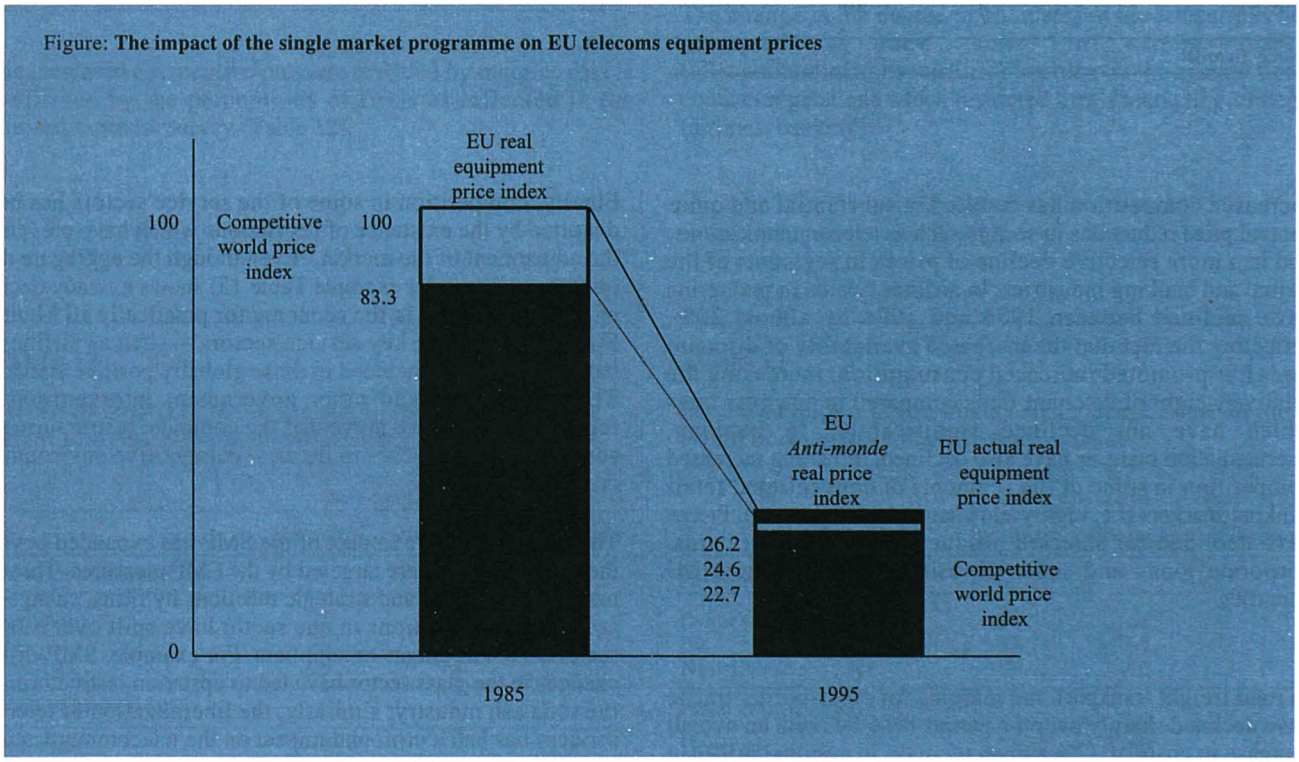
The EU telecoms equipment industry employs over 700 000 people, and has a turnover of over ECU 30 billion. Telecoms equipment production is an important activity for global economic and social development — the supply of affordable, state-of-the-art telecoms equipment is a prerequisite for the development of the European economy and the economies of other regions of the world. Telecoms equipment production is a technology-intensive activity in which the EU has maintained its global competitive position over recent years. Defending and increasing the competitiveness of equipment manufacturing is a key challenge for the EU. It is therefore important to understand the impact of a major environmental change, such as the single market programme, on the competitiveness of the telecoms equipment manufacturing sector.

While single market measures have had a significant direct effect on many parts of the European telecoms equipment sector, their most profound impact in telecoms equipment manufacturing has been indirect. The changes occurring through the creation of an internal market for telecoms services are having a substantial impact on the structure and performance of the European telecoms equipment sector. The introduction of competition in telecoms services is causing telecoms operators to be more demanding in their relationships with suppliers.

The study by Analysis Ltd. and Arcome (1996) concludes that the primary impact of the internal market has been to accelerate the reduction of EU equipment prices by changing the purchasing behaviour of Europe's telecoms operators, which account for over 80% of telecoms equipment purchases in the EU.

The attached figure illustrates the trends in real equipment prices from 1985 to 1995, and the estimated impact of the single market programme. In 1985 EU telecoms equipment prices were considerably higher than equivalent prices in other regions. Since 1985, EU equipment prices have fallen dramatically to around one quarter of their 1985 levels in real terms, and the price premium in EU markets has fallen from 20 to 8%. In the absence of key internal market measures, the EU would have foregone average equipment price falls of approximately 7% (in total, 1985 to 1995), equivalent to between ECU 1.5 billion and ECU 2.0 billion per annum of additional cost to equipment purchasers in the EU.

Figure: **The impact of the single market programme on EU telecoms equipment prices**



In the opposite direction, the pro-competitive impact of the SMP may have been dampened by the behaviour of firms and/or governments. As argued before, this has been the case for certain sectors with regards to governments and State aid. In the case of firms, it could be the explanation of the *de facto* limited changes in the liberalization of markets related to public procurement. Note also that these markets have registered remarkable increases in concentration and firm size through a process of mergers and acquisitions, and only limited pressure on price-cost margins.

5.4. The convergence of prices across the European Union

5.4.1. Introduction

The previous sections have assessed whether the benefits from increased efficiency and competition have been achieved. This last section considers the extent to which the implementation of the SMP has led to the development of pan-European markets: that is, integrated markets where arbitrage is allowed to operate and Member State borders are not hindering economic transactions. Under certain conditions,[1] the emergence of pan-European markets will translate into increased price convergence across the Union and will provide an indication that the gains from increased competition and efficiency are being fulfilled.

It must be stressed, however, that price convergence is not an end in itself. The existence of price disparities across different geographic markets is a source of concern only if it reflects barriers to the arbitrage process[2] that prevent the completion of a truly integrated European market.

The extent to which price convergence is observed will depend, first, on the potential for price convergence. This potential is related to the significance of structural factors (i.e. arbitrage costs, demand elasticities, vertical differentiation and other structural characteristics of markets) which prevent price equalization. And, second, to the extent to which behavioural and policy factors by economic operators (firms or governments) have maintained barriers which were artificially segmenting the Member State markets, thus preventing the effective integration of markets.

5.4.2. Price differentials throughout the EU

The analysis of price convergence is based on the evidence provided by the DRI study (DRI, 1996). This study constructs measures of price dispersion across the Union for a large

[1] Price convergence is neither a *necessary* nor a *sufficient* condition for markets to become pan-European. It is not a necessary condition as markets can become integrated without a significant change in the extent of price dispersion. Nevertheless, it is possible to describe the conditions under which such a non-convergence integration process is likely to take place (consumers might not be willing to arbitrage when decision variables other than price — for example, quality— are key determinants of product choice). Price convergence is not a *sufficient* condition for market integration since prices may converge to a high level across markets which are kept segmented by firms coordinating their actions. It is also possible, however, to establish the circumstances in which such a coordinated behaviour is likely (i.e. markets where structural conditions make collusion easier).

[2] The dispersion of prices does not constitute a properly defined welfare measure. Indeed, economic theory shows that forbidding price discrimination can be welfare-reducing when arbitrage is not possible. However, we focus on spatial markets where arbitrage is possible and discrimination involves freight absorption (consumers which are close to the manufacturer have a lower elasticity and are charged a higher price). In such a situation, a reduction of arbitrage costs may reduce the discrimination against domestic consumers and is unlikely to lead to a price increase in foreign (high elasticity) markets which results in the interruption of supply and has harmful welfare consequences.

Box 4: Price convergence: Data sources and methodology

The analysis of price convergence across Member States and over time is done at a detailed level, for 174 goods and services categories, using price dispersion indices provided by Eurostat. The database covers the 15 EU Member States, for the years 1980, 1985, 1990 and 1993 (Sweden and Finland are not included in 1980).

Among the 174 goods and services categories, are:

(a) consumer goods, of which:
- 51 food and drink products
- 2 tobacco products
- 8 clothing and footwear products
- 24 durable goods
- 18 other manufactured goods

(b) services

(c) energy products

(d) equipment goods

(e) construction categories.

Eurostat has devised a method to ensure the greatest degree of comparability between these categories across countries. In the case of consumer goods, the headings represent the different categories of final consumption of households by function. As for equipment goods, the headings are based on a classification by type of product which refers to the technical characteristics of products.

Two important features of the price indices supplied by Eurostat must be underlined:

(a) The series consist of national price indices as compared to the EU 12 average, and not price levels. For each Member State, each product/service and each year considered, the price index is calculated in such a way as to be equal to 100 if the observed price is equal to the EU 12 average. This means that it is possible to compare changes in price dispersion between years but it is impossible to compare changes in price levels over time (in other words, it is possible to say whether prices have converged over time but impossible to say whether they have converged towards a higher or a lower average level).

(b) The indices are based on prices inclusive of taxes (both VAT and excise duties) for consumption goods and services and net of deductible VAT in the case of equipment goods and construction.

variety of goods and services at different points in time between 1980 and 1993. The series consist of national price indices as compared to the EU 12 average, and not price levels. For each Member State, each product/service and each year considered, the price index is calculated in such a way as to be equal to 100 if the observed price is equal to the EU 12 average.[1] This means that it is possible to compare changes in price dispersion between years but it is impossible to compare changes in price levels over time (in other words, it is possible to say whether prices have converged over time but impossible to say whether they have converged towards a higher or a lower average level; see Box 4 for further details).

The analysis of the trend in price disparities per category of products/services after 1980 has been done over four geographical regions, reflecting the different stages of EU integration. The first region considered is the EU 6, consisting of the six founding EU Member States. Another region is then defined with the following three entrants (Denmark, Ireland and the UK), called EU 9. For both the EU 6 and the EU 9, price dispersion coefficients, defined as the standard deviation of prices divided by the region's average, were calculated using final prices (including all indirect taxes) and prices net of VAT (and excise duties for certain products) for each of the years: 1980, 1985, 1990 and 1993. A third region is then considered, consisting of the EU 12 (i.e. the EU 9 plus Spain, Portugal and Greece), for which the price dispersion coefficients based on price data net of VAT was calculated only for 1990 and 1993, as none of these countries had fully adopted a VAT system by 1985. The fourth region covers the EU 15, i.e. the EU 12 plus the three Member States which joined the EU on January 1, 1995: Sweden, Finland and Austria. The coefficients of price variation for the EU 15 were calculated using prices including taxes for 1985, 1990 and 1993 and prices excluding VAT for 1990 and 1993. They were calculated to serve as a reference and to provide information on the degree to which increased European integration has also led to a greater convergence of these countries' prices towards the EU average.

We start by describing the evolution of price dispersion between 1980 and 1993: has there been evidence of price convergence following the launch of the internal market programme, and, if so, has this price convergence taken place throughout the EU or have price disparities been reduced comparatively more in some regions or in some markets?

[1] The price indices are essentially purchasing power parities (weighted averages of price ratios in national currencies) multiplied by current exchange rates. Temporary misalignments of the current exchange rate can therefore lead to temporary changes in convergence or divergence which have nothing to do with the underlying process of microeconomic price convergence which we want to examine. Appendix 4 checks the robustness of the indicator of price convergence to this type of problem.

The following subsection describes the link between the creation of pan-European markets and price convergence, and discusses the expected theoretical impact on prices of increased integration according to different characteristics of the markets considered. It thus presents a theoretical framework which determines the conditions under which the SMP was expected to lead to price convergence, and then assesses the extent to which structural, behavioural or policy factors explain the observed patterns in price convergence over the period 1985 to 1993.

Price convergence by product/service

The analysis of the overall trends in price dispersion in the EU shows that:

(1) There has been a general trend towards price convergence in the EU 12 over the period 1980-93; this tendency has been observed for consumer goods, equipment goods and services, but not for energy and construction (see Table 16a below).

Table 16a

Coefficients of price variation for selected groupings

(Prices including taxes)

	1980	1985	1990	1993
EU 6				
Consumer goods	15.9	14.2	13.5	12.4
Services	22.7	23.9	20.0	21.3
Energy	18.4	12.5	19.4	24.3
Equipment goods	10.5	9.7	11.6	12.5
Construction	15.7	11.0	14.0	19.1
EU 9				
Consumer goods	19.9	19.1	20.3	18.0
Services	25.2	25.6	24.6	23.4
Energy	22.1	16.1	24.7	30.6
Equipment goods	13.1	12.5	12.2	12.9
Construction	20.1	14.4	16.5	22.4
EU 12				
Consumer goods	26.0	22.5	22.8	19.6
Services	33.0	33.7	31.8	28.6
Energy	30.8	21.1	28.0	31.7
Equipment goods	18.0	14.0	13.1	14.5
Construction	24.4	22.1	23.5	27.4
EU 15				
Consumer goods	—	27.0	25.9	19.6
Services	—	35.2	35.9	28.1
Energy	—	23.7	27.5	31.9
Equipment goods	—	15.0	14.2	15.3
Construction	—	22.4	23.5	27.0

Source: DRI.

(2) For energy and construction, price dispersion decreased between 1980 and 1985 but increased substantially thereafter.

(3) The convergence in consumer products and in services prices has actually tended to accelerate following the launch of the internal market programme.

(4) Price dispersion is lowest the more traded products/services are within the EU.

(5) The product categories which have seen the greatest convergence in prices following the launch of the single market programme correspond to highly traded sectors and, more specifically, to sectors that are more open to competition from non-EU producers; the reduction in price disparities for sectors classified as having been subject to high non-tariff barriers before the launch of the single market programme is low.

The price convergence patterns by specific products/services provide complementary information:

(1) Among the 10 products/services categories for which price disparities in the EU 12 were highest in 1993, there are four products/services related to health care. This reflects the fact that both pharmaceutical product prices and health care delivery prices are still highly regulated at national level. Two additional product categories with high price dispersion are energy products, again reflecting regulatory price controls and differences in indirect tax rates, and two are national monopolies in most EU countries (water distribution and railway transport services).

(2) The number of manufactured products for which price dispersion was amongst the 50 highest in 1980 has come down significantly since. By 1993, the list of 50 consumption categories for which price disparities were highest was dominated by services (as opposed to manufacturing) sectors.

(3) As expected, differences in GDP per capita explain disparities in price levels across the EU in many services sectors. There are, however, 18 out of 37 service categories for which price disparities are not correlated with the differences in GDP per capita: these include almost all health-care services, along with a number of regulated activities, among which are water distribution, postal services, telecommunications services and railway transport.

Table 16b summarizes the situation of price dispersion in 1993 and the evolution between 1985 and 1993 for all product/service groups.

Table 16b

Level and evolution of price dispersion by product/service groups

	Price dispersion in 1993	Evolution (1985-93)
Food products	Comparatively low	Average trend stability
Beverages	Very high (less traded, taxation for alcohol)	Notable trend towards price convergence
Clothing, footwear		
• Baby clothing and accessories for clothing	• high price dispersion	• convergence
• Rest of textile clothing, footwear	• average price dispersion	• average to slow convergence
Durable consumer goods		
• Radio equipment, TV, washing machines, recorders, personal computers	• comparatively low	• strong convergence
• Fridge, freezers, flooring, household appliances, film	• comparatively low	• slow convergence on divergence
• Heating, air conditioners, motor vehicles	• high price dispersion	• convergence close to the average
Energy	• high dispersion	• increase of disparities
Services	• high dispersion	• some convergence but slow compared to manufacturing
Equipment goods	• low dispersion	•average
Construction	• relatively high	• convergence between 1985 and 1993

Price convergence by country

The analysis of overall trends in price dispersion in the EU shows:

(1) The tendency for prices to converge has been comparatively greater in the three Member States which joined the EU in 1989 (Greece, Portugal and Spain) than in the EU 9; this may reflect a 'catch-up' effect of integration.

(2) Convergence of price dispersion indices for the EU 12 towards those of the EU 6 has been fastest for durable consumer products and a number of market services, and slowest for tobacco products and alcoholic beverages in general. For energy, the trend was for increased price disparities in all three regions, but a much stronger increase in price disparities in the EU 6 and EU 9 than in the EU 12. The same holds for health care.

(3) In the EU 15, price disparities in 1993 are not significantly greater than in the EU 12, except for food, beverages, clothing and footwear; this mainly reflects differences in the regulatory environments for these products in Austria, Finland and Sweden.

(4) In the service sectors, price convergence has been observed for most of the market services, mainly in the EU 12. In the EU 6 and EU 9 regions, convergence has taken place at a much slower rate.

(5) The ranking of countries according to the lowest or highest price level is remarkably stable over time; out of 145 goods/services categories, there are only 18 for which some countries shift from being a high-price to a low-price country over subsequent periods, and vice versa.

Indirect taxation and price convergence

The general assessment of the role of indirect taxes reveals that, while they significantly increase price disparities for some product/service categories, they do not appear to have altered overall price convergence or divergence trends between 1980 and 1993. There is no significant difference in price convergence/divergence patterns including or excluding indirect taxes.

Table 17 shows that differences in VAT structures between Member States mainly influence the relative dispersion of the prices of consumer goods and energy products, as opposed to those of services. Overall, differences in VAT rates have increased price disparities of consumer goods and energy, as their coefficients of variation for prices including VAT is higher than for prices net of VAT (see Table 17).

Table 17

Coefficients of price variation for selected groupings

(Based on prices including and excluding VAT)

	1980		1985		1990		1993	
	Incl. VAT	Excl. VAT	Incl. VAT	Excl. VAT	Incl. VAT	Excl. VAT	Incl. VAT	Excl. VAT
EU 6								
Consumer goods	15.9	15.7	14.2	14.2	13.5	13.4	12.4	12.6
Services	22.7	23.1	23.9	24.6	20.0	20.2	21.3	21.7
Energy	18.4	17.2	12.5	10.4	19.4	18.8	24.3	23.4
EU 9								
Consumer goods	19.9	18.8	19.1	17.7	20.3	18.5	18.0	16.6
Services	25.2	25.7	25.6	25.2	24.6	23.7	23.4	23.3
Energy	22.1	20.5	16.1	13.3	24.7	22.6	30.6	27.4
EU 12								
Consumer goods	..	..	..	..	22.8	21.8	19.6	18.4
Services	..	..	..	..	31.8	30.9	28.6	28.4
Energy	..	..	..	..	28.0	26.8	31.7	24.7
EU 15								
Consumer goods	..	..	..	..	25.9	24.6	19.6	18.4
Services	..	..	..	..	35.9	37.4	28.1	28.4
Energy	..	..	..	..	27.5	26.3	31.9	30.7

Source: DRI.

It is clear, however, that price differences between EU countries stem mainly from factors other than indirect taxation, and that price convergence patterns are explained more by movements in underlying prices net of taxes than by changes in VAT rates.

There are, however, a few detailed product items for which indirect taxes account for a significant part of price dispersion (see Tables 18 and 19). This is particularly the case for products subject to excise duties. Excise taxes indeed play an important role in the case of tobacco products and for some energy products and alcoholic beverages, increasing significantly price disparities as compared to the trend in prices net of taxes.

When the coefficients of variation of prices excluding VAT and excise duties are compared with those for prices including VAT and excise duties in the EU 9 over the period 1985 to 1993, it appears that indirect taxes on alcoholic beverages, tobacco and energy products significantly raise the average coefficient of price variation for these products. In 1985, VAT and excise duties accounted for a quarter of the dispersion in beer prices and close to a fifth in wine prices. Changes in VAT and excise rates after 1985 have, however, reduced the distortionary effect of these indirect taxes from a price convergence point of view.

However, for heating oil and other heating fuels, although price disparities based on prices net of taxes increased consistently after 1985, indirect taxes have been a significant additional source of divergence.

Table 18

Comparison of the coefficients of variation for alcoholic beverages and tobacco products, based on price indices with and without indirect taxes

Product	CV including taxes — EU 9				CV excluding VAT and excise duties — EU 9			
	1980	1985	1990	1993	1980	1985	1990	1993
Alcohol	39.3	33.6	33.0	34.4	36.5	30.7	29.6	31.3
Wine	48.9	47.9	40.8	30.7	46.9	38.8	33.0	26.0
Beer	22.6	32.4	25.3	18.9	21.5	24.1	19.3	16.2
Other alcoholic beverages	24.2	36.7	31.3	17.9	21.9	34.2	28.4	15.0
Tobacco products	38.0	37.3	33.3	24.6	35.7	29.9	26.4	20.5

Source: DRI.

Table 19

Comparison of the coefficients for energy products and fuels and lubricants for motor vehicles, based on price indices with and without indirect taxes

Product	CV including taxes — EU 9				CV excluding VAT and excise duties — EU 9			
	1980	1985	1990	1993	1980	1985	1990	1993
Electricity	25.2	12.5	5.6	20.1	24.9	11.2	15.1	20.1
Natural gas	34.9	25.6	36.4	40.9	30.8	22.7	33.4	36.1
Liquefied gas	21.7	11.7	24.3	24.5	23.1	13.9	21.1	21.8
Heating oil and other heating fuels	8.7	13.2	35.6	47.5	6.6	8.7	24.1	31.3
Coal, coke and other solid combustibles	21.8	14.7	18.0	29.4	20.1	12.6	23.2	28.7
Fuels and lubricants for motor vehicles	11.6	10.9	12.8	9.3	9.5	8.6	11.4	10.1

Source: DRI.

5.4.3. Price convergence and increased integration

Two geographic areas form part of the same market for a specific tradable product or service if the 'law of one price' applies, i.e. if the prices of identical products are similar, net of any arbitrage costs. The price of the same product at the same horizontal stage in two places will, however, be equal only if the two following conditions apply: consumers are willing to transfer demand between suppliers on the basis of prices net of arbitrage costs (i.e. the cross-price elasticity of demand is high); consumers are able to transfer demand between suppliers.

The first condition is not necessarily always fulfilled in the EU, as there can be:

(a) language barriers;

(b) national preference bias (which can lead to vertical differentiation and market segmentation into branded/own label products, implying differences in packaging, quality, etc.);

(c) non-price based competition (reputation, after-sales service, etc.).

On the other hand, for the second condition to be fulfilled, i.e. for customers to be able to transfer demand between suppliers, implies that there is no market-sharing cartel, and that the distribution systems are organized in such a way that customers indeed have access to suppliers from different or distant geographic markets. Exclusive distribution systems (as in the fine fragrances market) or stringent access-to-market regulations (as in the pharmaceutical products' market) indeed hinder the arbitraging process.

In the case of non-tradable services, the 'law of one price' does not apply because prohibitive arbitrage costs (typically, the service is consumed at its production stage) make it imposible for consumers to transfer demand across countries. As a consequence price convergence in services will result only if determinants of price levels such as GDP per capita, regulatory regimes and market structures converge.

As argued before, price homogeneity is not a sufficient condition for a market to be pan European, as uniformity of prices could result from cooperation between firms. To discriminate between cases where price convergence results from increased competition and cases where it results from behaviours that work counter to the single market philosophy, an analysis of the changes in market structure (number of companies, degree of concentration, trend in profitability) is needed.

There are a number of factors which can explain price disparities for the same product at the same horizontal stage of development. As indicated above, this can be the case when there are structural characteristics on the demand or on the supply side which prevent the arbitrage process from taking place (a discussion of the supply side characteristics for manufacturing sectors is provided in Box 2). These are referred to below as the 'structural factors', and include genuine arbitrage costs, differences in consumer preferences and the extent of vertical quality differentiation of products. For services, GDP per capita is an important factor.

Price disparities can, however, also result from strategies of companies aimed at segmenting markets or raising barriers to entry to reduce competition. These factors are referred to as 'behavioural factors' and can explain the failure of prices to converge in some markets: market sharing agreements, the control of distribution or of supply source, the creation or the increase of barriers to entry.

Finally, government policies can limit or constrain the arbitrage process (protective regulatory environment, existence of barriers to entry, etc.). These policies are referred to as the 'policy factors' restraining price convergence in the remainder of the analysis.

For all the products/services markets in which price disparities are being observed, the assessment of the degree of pan-Europeanization of the market will thus require identifying whether it is structural, behavioural or policy factors which explain the observed price differences.

This identification is undertaken on the basis of a multivariate linear regression model where price dispersion at the sectoral level for the years 1980, 1985, 1990 and 1993 is the dependent variable, and several regressors are included with the objective of capturing the abovementioned structural and policy factors (see Box 4 and Annex 4 for details).

The general results of this analysis are the following:

(1) Structural factors, reflecting differences in consumer preferences or leading to a competitive process based more on quality than on price explain a significant part of the variation in price disparity in the EU 9 across product categories, particularly for products/services intensive in R&D and advertising. However, policy factors (taxes and NTBs) also emerge as significant explanatory factors, albeit with a reduced magnitude.

(2) Indeed, disparities in tax policies across countries were also found to have a significant positive impact on price disparity across the EU.

(3) Similarly, the existence of high or moderate non-tariff barriers (NTBs) hindering the arbitraging process also explains part of the observed price disparities.

(4) A high degree of concentration in national markets tends to favour price disparity, whereas a high degree of internationalization of the market, either through import penetration or through the presence of multinational companies within national markets, tends to decrease price disparity.

(5) In the absence of non-tariff barriers, or where these are ineffective, national structures (measured by high degree of concentration in national markets) and national regulations (in particular differences in taxation) lose their effectiveness. Thus, in markets with no NTBs, behavioural and policy factors are less effective in keeping markets fragmented, and it is mainly structural factors which explain price disparities, where these are still observed.

(6) Overall, about 30% of the observed variance of the dependent variable (the coefficients of price variation include taxes in the EU 9) is explained by structural and quantifiable policy factors. The remainder is due to other factors, among which policy barriers and, possibly, behavioural responses of firms to the rise in competition in the market.

By type of sector (see Box 5 below) the following results should be highlighted:

(1) In homogeneous products markets, where competition is solely based on prices, and in horizontally differentiated products markets where competition is based both on price and on product diversity, the inception of the SMP has generally led to increased price convergence. Where increased convergence has not been observed, as in many clothing and footwear categories and for products of boilermaking, this can be associated either to remaining policy barriers (harmonization of standards not achieved, insufficient mutual recognition or incorrect interpretation of standards and norms), or to behavioural/structural factors related to the organization of distribution. In the textiles and clothing markets, for example, differences in the organization of distribution across Member States are likely to explain the remaining high price disparities.

(2) For vertically differentiated products/services the situation is more complex. In particular, in markets intensive in both research and advertising, price disparities are relatively high and stable over time, confirming the theoretical analysis according to which vertical differentiation and barriers to entry based on high levels of endogenous costs effectively hinder the arbitrage process. Examples of vertically differentiated markets intensive in both research and advertising are heavy household appliances, televisions, electronic equipment or optical instruments and photographic material. In these markets, the econometric analysis shows that the rate of extra-EU import penetration increases price dispersion (higher rates of extra-EU trade penetration being associated with higher coefficients of price variation), indicating that imports in these markets are generally of an intra-firm type and do not increase the competitive pressure.

(3) On the contrary, vertically differentiated products markets that are intensive in research only show a low average price disparity, suggesting that huge investments in research and development not coupled with high advertising investments compel firms to adopt pan European strategies. Examples of such markets are tyres, inner tubes and other replacement parts for motor vehicles, other modes of transport (bicycles and motorcycles), and computers. These are all markets in which price disparities have been noted to be low, or declining.

(4) Finally, in vertically differentiated markets in which high advertising to sales ratios reflect companies' strategies to raise barriers to entry and increase consumers' willingness to pay by shifting the emphasis of competition from price to quality, market fragmentation typically continues to exist, along with high price disparities, even after the removal of non-tariff barriers. Examples of such markets are food products such as edible oils and confectionery, and beverages such as tea and alcohol. In these markets, however, higher rates of import penetration are associated with lower levels of price disparities. The high level of price disparities in these markets compared with other markets largely reflects consumer inertia created by brand loyalty based on high advertising expenditures. Where some convergence is nevertheless observed between 1990 and 1993, this likely suggests a switch to pan-European brands.

This section has shown that the changes in the structures and in the degree of competition of European markets prompted by the implementation of the SMP have also resulted in increased price convergence across the EU between 1985 and 1995. For certain goods no additional convergence of prices is expected, since the existing levels of price dispersion are the result of structural sectoral characteristics which are fully compatible with the achievement of an integrated pan-European market.

The increased convergence of prices for many products and services across the EU corresponds, at the detailed microeconomic level, to the process of convergence in inflation (disinflation) achieved in the EU over the last few years. The SMP effect on prices has facilitated the conduct of a stability oriented macroeconomic policy in making adjustments less painful.

Box 5: The econometric analysis of the factors underlying price convergence

The objective of this econometric analysis is to shed some light on the relative importance of various factors in explaining the observed dispersion of prices across product categories.

The dependent variable in the econometric regressions is the coefficient of variation of the price indices inclusive of taxes at the EU 9 level for the years 1980, 1985, 1990 and 1993.

Three groups of explanatory variables are considered.

The first includes a demand-side structural factor and two quantifiable policy factors affecting the arbitraging process:

(a) The disparity of demand across EU countries.

(b) The disparity in tax policy across EU countries.

(c) The existence of non-tariff barriers (NTB).

The second group of variables includes supply-side structural variables describing the nature of competition in each market (see Box 2). These variables, which are supposed to describe structural characteristics of the market, do not vary over time. This means that we do not take into account changes in these structural characteristics resulting from strategic adaptation to a new competitive environment.

This second group of variables includes:

(a) The importance of exogenous sunk costs.

(b) The importance of endogenous sunk costs.

(c) The extent of vertical differentiation.

The third group includes variables capturing changes in the extent of competition in each product category:

(a) Intra-EU import penetration.

(b) Extra-EU import penetration.

(c) The share in total sales of the four largest firms, the share of the five leading firms in total sales and a proxy for concentration at the EU level[1] measured by the Herfindhal index at the NACE three digit level.

(d) A proxy for multinationalization in a given industry,[2] is measured as the weighted average of the degrees of multinationality for constituent firms in each NACE three digit industry.

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[1] See Davies, S. and Lyons, B. (1996), *Industrial organization in the European Union*, Oxford University Press.

[2] See Davies, S. and Lyons, B., (*op. cit*).

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Annex 1: The econometric analysis of firm size

EAG (1996) estimates an econometric model of average business unit size. The authors identify the factors that determine the average size of business and analyse how a reduction in trade barriers affects the relationship explaining firm size. As with price convergence, the mechanisms by which the creation of a fully integrated internal market influences the achievement of economies of scale and scope depends crucially on the nature of competition in the markets (see Box 2 above). Moreover, the EAG report suggests that the type of competition would not change the variables entering the econometric model, but their effects on firm size. As a consequence the analysis of the determinants of firm size will be undertaken separately by type of industry.

The specification of the econometric model may be summarized as follows.

Market size. Under imperfect competition, firms would produce at less than the minimum point on the cost curve, and there is little we can say about how market size will affect the attainment of scale economies. This is because the balance of higher output per firm and new entry depends on consumer attitudes to more product variety versus lower prices. Nevertheless, Krugman (1979) has argued that at least some of the effect of an increase in market size is likely to manifest itself in higher output per firm. Market size is measured as total production within the EU by NACE industry.

Minimum efficient technical scale (MES). If cost curves are L-shaped, the average size of firms is likely to be positively associated with MES. The source for MES is Davies and Lyons (1996), where earlier work by Pratten on the collation of engineering estimates is applied and extended consistently across the NACE industrial classification.

Pro-competitive effects of the SMP. EAG employs four industry-specific measures designed to capture different industry-specific aspects of intra-EU trade barriers. First, a dummy variable, PUB, which equals one if the industry is considered to be heavily influenced by public procurement.[1] Second, another dummy variable, REG, which equals one if the industry is heavily influenced by national regulations.[2] Third the so-called openness effect: the absence of trade may result in firms in a Member State being unable to achieve sufficient size to fully exploit economies of scale. This effect is measured by the sum of the import penetration and the export propensity ratios. Finally, the comparative advantage effect: high intra-EU exports in a given industry accompanied by low intra-EU imports suggest that a Member State has a comparative advantage. This effect is represented by the difference between the export propensity and the import penetration ratios.

The equation that explains the average size of business units prior to the advent of the SMP is:

$$x_{jk} = f(MES_j, \text{market size}_j, PUB_j, REG_j, \text{openness}_{jk}, \text{comparative advantage}_{jk}) \quad (1)$$

where j indexes industry and k country.

We would expect two types of effects as firms respond to reduced or eliminated barriers to trade. First, a general move towards greater competition should affect all industries (e.g. due to the removal of border controls). We would expect this to have the greatest effect on unit size where average size has been lowest in relation to economies of scale. This initial disadvantage is measured as the average size of business unit relative to MES. Second, we expect to see stronger effects in those industries which were previously most affected by non-tariff barriers to trade, represented by PUB and REG.

The trade-based measures, however, incorporate direct measures of changes over time. Thus, an additional specification focuses on changes in average unit size between pre- and post-SMP measures is:

$$\Delta x_{jk} = g(\text{initial disadvantage}_{jk}, \Delta\text{market size}_j, PUB_j, REG_j, \Delta\text{openness}_{jk}, \Delta\text{comp. advantage}_{jk}) \quad (2)$$

Due to data limitations, these models are estimated on the basis of 3-digit NACE sectoral data for only Member States: Germany, France, Italy, UK, Netherlands, Denmark. Taking into account confidentiality and other data availability problems, this leaves 426 observations. Growth in mean size, growth in EU size and the initial disadvantage were each measured as the difference in the logs, and the change in trade ratios are simple differences. Since MES is measured in terms of sales (not value added), the initial disadvantage is measured as the difference between MES and mean size measured by sales. Given the institutional differences between Member States, separate public procurement and regulated industry dummies were used for each country. Finally, simple dummy variables for each country were included. the objective is to capture simple country effects, perhaps reflecting the way national business unit sizes are related to the size of the home market. Since the regressions are estimated with a constant, one country dummy has to be excluded to avoid perfect multicollinearity. Germany is the excluded country, so the coefficients on the remaining country dummies should be interpreted as measuring the typical difference in mean size of business unit, as compared with Germany, and having taken into account the other variables in the regression. All variables were then entered linearly into equations (1) and (2). The

[1] See Buigues et al. (1990).
[2] Same source.

public procurement industries are all to be found in type 1 and type 2r sectors, while regulated industries are often associated with consumer protection and are concentrated in the type 2a and type 2ar sectors.

Equation (1) is estimated using 1986 data, as the starting point highlighting sources of production inefficiency before the Single European Act was implemented. Equation (2) is estimated for changes between 1986 and 1991. As indicated earlier, the latter date is the last for which Eurostat data were available. Thus, the period of analysis is dictated entirely by data availability. This is very unsatisfactory, not least because the implementation of the internal market programme was not due to be completed before 31 December 1992, and some measures were still not implemented then. Thus, the changes equation can give little more than a glimpse at the effects of the internal market programme, picking up only the immediate effects of the first measures to be implemented, and the effects of firms with foresight anticipating later measures.

Main findings

Industries not competing in advertising nor in R&D (type 1, Table A1.1)

By far the most significant variable is MES, which gives an elasticity of firm size with respect to MES of one third. It is striking to observe that there is no effect of the size of the EU market on mean unit size. Our measures of trade openness and comparative advantage have no effect on mean size, but public procurement does. In all countries, this bias tends to create too many small firms (as compared with the general relationship between average size and economies of scale), but the effect is quantitatively strongest in France and the Netherlands, followed by Denmark. Finally, all countries have a significantly smaller average size as compared with Germany, but there is no systematic relationship between the size of this effect and the size of the home market. Italy has many smallest size firms, and although Denmark is next smallest, Dutch firms are of similar size to those in France and the UK (once all other factors in the regression model have been taken into account).

Turning to the changes between 1986-91, although there is a suggestion that EU growth feeds through initially into larger firms, there is no evidence of any early SMP effect. Industries with a larger initial disadvantage are not increasing in unit size any more than are others, there is still no trade effect, and nor is mean size being made up any faster in public procurement industries. The only systematic effect is that most countries, but particularly Italy and the UK, are falling even further behind Germany in terms of relative size of unit. As will be seen, the case of Italy's low and decreasing relative size of business units is quite pervasive.

Table A1.1

Type 1 industries

	1986 mean size		1986-91 Change in mean size
Constant	7.51 (26.63)**	Constant	0.14 (4.49)**
MES	0.33 (14.05)**	Initial disadvantage	−0.01 (−0.62)
EU size	−0.02 (−0.60)	EU growth	0.23 (1.63)
Trade penetration	0.00 (0.06)	Change in trade penetration	−0.02 (−0.61)
Trade balance	0.07 (1.46)	Change in trade balance	0.10 (0.79)
PUB * D	−0.21 (−0.76)	PUB * D	0.01 (0.10)
PUB * F	−0.83 (−5.14)**	PUB * F	−0.08 (−1.15)
PUB * I	−0.20 (−1.06)	PUB * I	0.00 (0.11)
PUB * UK	−0.16 (−1.54)	PUB * UK	0.01 (0.14)
PUB * NL	−0.52 (−4.25)**	PUB * NL	−0.00 (−0.03)
PUB * DK	−0.28 (−2.06)*	PUB * DK	0.02 (0.14)
F	−0.50 (−3.87)**	F	−0.09 (−2.45)*
I	−1.18 (10.02)**	I	−0.26 (−7.15)**
UK	−0.57 (−4.89)**	UK	−0.25 (−5.60)**
NL	−0.52 (−3.47)**	NL	−0.08 (−2.02)*
DK	−0.82 (−5.70)**	DK	0.05 (0.86)
R^2	0.66	R^2	0.30
Number of observations	248	Number of observations	244

t-ratios in parenthesis, based on White's adjustment for heteroscedasticity
** significantly different for zero at 1% level (2-tail test)
* significantly different for zero at 5% level (2-tail test)
+ significantly different for zero at 10% level (2-tail test).

Industries competing in advertising (type 2a, Table A1.2)

As expected, Table A1.2 shows that in type 2a industries there is a quantitatively smaller relationship between mean size and MES, but now a positive relationship with EU size emerges. In fact, the effect of market size is three times as large as that of

Table A1.2

Type 2a industries

	1986 mean size		1986-91 Change in mean size
Constant	5.41 (10.64)**	Constant	0.24 (4.22)**
MES	0.11 (2.01)*	Initial disadvantage	-0.01 (-0.75)
EU size	0.33 (4.64)**	EU growth	0.41 (2.63)*
Trade penetration	-0.05 (-0.60)	Change in trade penetration	-0.36 (-1.88)+
Trade balance	0.26 (1.95)+	Change in trade balance	0.31 (0.90)
REG * D	-0.19 (-0.95)	REG * D	0.06 (0.75)
REG * F	0.48 (2.97)**	REG * F	0.05 (0.51)
REG * I	0.32 (1.04)	REG * I	0.14 (1.83)+
REG * UK	0.56 (1.78)+	REG * UK	0.05 (0.49)
REG * NL	0.64 (1.18)	REG * NL	0.06 (0.38)
REG * DK	0.24 (0.65)	REG * DK	-0.26 (-4.47)**
F	-0.34 (-2.03)*	F	-0.10 (-1.43)
I	-0.92 (-5.64)**	I	-0.33 (-4.10)**
UK	-0.13 (-0.49)	UK	-0.26 (-3.91)**
NL	-0.06 (-0.21)	NL	0.22 (1.84)+
DK	-0.29 (-0.72)	DK	0.31 (4.48)**
R^2	0.65	R^2	0.70
Number of observations	60	Number of observations	59

t-ratios in parenthesis, based on White's adjustment for heteroscedasticity
** significantly different for zero at 1% level (2-tail test)
* significantly different for zero at 5% level (2-tail test)
+ significantly different for zero at 10% level (2-tail test).

MES. This may reflect the fact that advertising spending is endogenous and becomes higher in larger markets (see Box 2) thus enables firms to increase output per business unit. There is only very slight evidence of comparative advantage allowing positive trade-balance locations to achieve greater scale, but as we have already stated, integration in type 2a industries tends to come through multinational firms producing internationally, rather than through international trade. The effect of regulation is much weaker than was public procurement in type 1 industries. However, it is interesting to note that the predominant effect is now to raise mean size. Presumably, this reflects either the deliberate creation of national champions, or (more likely in these industries) the effective lobbying by market leaders to skew regulation to their own protection. The exception of the (insignificant) negative effect in Germany may be due to the way the beer industry was regulated there, with the opposite effect of protecting numerous small brewers. Finally, only Italy and France have significantly smaller average sizes than Germany.

Turning to the changes regression for type 2a, EU growth again shows through as enhancing mean size with a particularly strong effect. The most interesting coefficients are on the national intercepts. Firms in the two smallest countries in the sample, Denmark and the Netherlands, are experiencing positive relative growth in this sector, even relative to Germany (the coefficient on REG*DEN should be ignored as there is only one Danish regulated industry in this sample).

Industries competing in R&D (type 2r, Table A1.3)

Type 2r industries display many similarities with type 2a. Mean size depends on both MES and EU size, though (rather surprisingly) the balance lies between type 1 and type 2a industries. The trade balance is also a significant determinant of mean size. This suggests that firms are drawn to the most efficient locations, and this helps them achieving larger production scale economies compared to firms in more disadvantaged locations. Public procurement tends to increase size in these industries, but this is a significant effect only in Italy and Denmark. The most striking finding is the strong size advantage that German firms have in these high technology industries, with large negative coefficients on all the national intercepts.

The type 2r industries show by far most interesting changes regression. These industries show clear signs of an SMP effect raising average size systematically more in industries and locations where average size was initially smallest relative to MES (and even here, it is possible that there was some other cause, such as an increase in global competition). The rest of the story is consistent with the previous two industry groups. In particular EU growth affects significantly average size. Also, the national intercepts show increasing divergence from Germany; with the divergence trend smallest in the smaller countries (Netherlands and Denmark) and France, and greatest in Italy and the UK

Table A1.3

Type 2r industries

	1986 mean size		1986-91 Change in mean size
Constant	4.59 (8.75)**	Constant	–0.01 (–0.12)
MES	0.53 (9.96)**	Initial disadvantage	0.07 (2.37)*
EU size	0.24 (3.65)**	EU growth	0.46 (3.14)**
Trade penetration	0.31 (1.49)	Change in trade penetration	–0.14 (–1.24)
Trade balance	0.68 (2.83)**	Change in trade balance	0.24 (1.58)
PUB * D	–0.29 (–0.98)	PUB * D	–0.04 (–0.54)
PUB * F	0.13 (0.34)	PUB * F	–0.28 (–1.96)+
PUB * I	0.71 (2.04)*	PUB * I	–0.09 (–0.88)
PUB * UK	0.30 (1.02)	PUB * UK	–0.18 (–1.29)
PUB * DK	0.58 (4.91)**	PUB *DK	0.05 (0.24)
F	–0.69 (–3.02)**	F	–0.15 (–2.79)**
I	–1.37 (–5.91)**	I	–0.39 (–5.55)**
UK	–1.15 (–4.35)**	UK	–0.27 (–2.63)*
NL	–1.19 (5.18)**	NL	–0.03 (–0.13)
DK	–1.08 (4.86)**	DK	–0.10 (–1.13)
R^2	0.76	R^2	0.47
Number of observations	80	Number of observations	77

t-ratios in parenthesis, based on White's adjustment for heteroscedasticity
** significantly different for zero at 1% level (2-tail test)
* significantly different for zero at 5% level (2-tail test)
+ significantly different for zero at 10% level (2-tail test).

Table A1.4

Type 2ar industries

	1986 mean size		1986-91 Change in mean size
Constant	1.85 (1.54)	Constant	0.15 (1.32)
MES	0.22 (1.50)	Initial disadvantage	–0.04 (–0.76)
EU size	0.80 (3.84)**	EU growth	0.64 (1.94)+
Trade penetration	0.54 (2.62)*	Change in trade pen.	–0.04 (–0.20)
Trade balance	–1.03 (–1.94)+	Change in trade bal.	0.69 (1.36)
REG * D	–1.08 (–2.85)**	REG * D	–0.01 (–0.08)
REG * F	–0.37 (–1.42)	REG * F	0.10 (1.06)
REG * I	–0.25 (–0.73)	REG * I	0.21 (1.65)
REG * UK	0.87 (2.38)*	REG * UK	0.09 (0.55)
REG * NL	1.78 (3.16)**	REG * NL	–0.35 (–1.58)
REG * DK	1.33 (3.14)**	REG * DK	0.57 (2.31)*
F	–1.21 (2.88)**	F	–0.11 (–0.79)
I	–1.72 (–4.50)**	I	–0.18 (–1.06)
UK	–1.75 (–4.18)**	UK	–0.22 (–1.15)
NL	–3.26 (–4.47)**	NL	–0.02 (–0.08)
DK	–2.45 (–4.77)**	DK	–0.24 (–1.07)
R^2	0.65	R^2	0.43
Number of observations	38	Number of observations	37

t-ratios in parenthesis, based on White's adjustment for heteroscedasticity
** significantly different for zero at 1% level (2-tail test)
* significantly different for zero at 5% level (2-tail test)
+ significantly different for zero at 10% level (2-tail test).

Industries competing in advertising and R&D (type 2ar, Table A1.4)

The final, and smallest, group of industries is type 2ar. In these industries, the relationship between business size and technical economies of scale is much fuzzier, but there is a strong effect of EU size. In fact, the latter elasticity is not significantly different from unity. Only in this group does greater openness, manifested in higher trade penetration, feed into higher business unit size. There is also an interesting pattern to the effects of regulation. In the larger countries, particularly Germany, regulation reduces mean size, while in the smaller countries (the Netherlands and Denmark), it raises size. This may be partially compensating for a very strong size disadvantage that the firms in the latter countries seem to have in relation to Germany. The changes regression for type 2ar tells no interesting story.

Conclusion

The relationship between increases in size and the exploitation of economies of scale depends importantly on the prevalent type of competition in the industry. Overall, however, the analysis by EAG finds some strong national differences in the exploitation of economies of scale. Moreover, as predicted, government intervention in the form of public procurement bias and national regulations has a systematic effect on average size, tending to reduce it in type 1 industries but raise it in type 2.

The trade data reveal only a weak suggestion of trade barriers contributing to the under-exploitation of scale economies. As expected, 1991 was too early to see very much change as a result of the implementation of the SMP. Only in type 2r industries was there evidence to suggest that firms were increasing the size of business units most strongly where there was a significant size disadvantage, in anticipation of future competition. However, one clear picture did emerge from the analysis of changes: the size gap between German firms and those located in other Member States was positive and increasing across a wide range of industries.

Annex 2: National concentration and EU-wide concentration

With regard to the interpretation of concentration changes, there are two stages in the argument. First, in any given industry, EU concentration amounts to a weighted average of concentration within individual Member States, allowing for the possibility that some firms may be amongst the market leaders in more than one Member State.

For example, suppose the EU comprises 12 equal-sized Member States, in each of which there are 10 equal-sized firms. Assuming none of these firms operated in more than one Member State, the EU would comprise 120 independent firms in total. However, if each firm operated in, say, four of the Member States, then there would be only 30 genuinely independent firms in the EU as a whole. This idea underpins what Davies and Lyons refer to as their first core decomposition in their (1996) study:

$$HEU = HNAT * SPEC * NM \quad (1)$$

where HEU refers to EU concentration in a given industry, HNAT refers to the weighted average concentrations in that industry in individual Member States, NM is a measure of the extent of production across Member States by firms (referred to as intra-EU multinationality), and SPEC reflects the distribution of Member State sizes in that industry. All indices are derivatives of the Herfindahl index (although similar decompositions are also easily derived for other measures such as the Entropy.) This decomposition tells us that, for a given industry and set of Member State sizes, EU concentration will be higher, (a) the more concentrated is the industry within individual Member States, and (b) the higher is intra-EU multinationality.

The second stage to the argument focuses on concentration within individual Member States, and how it relates to average business size. Any measure of concentration depends on two aspects of the size distribution of business units: their number, and the inequality in their sizes. Concentration will be higher, (a) the fewer firms there are (that is, for a given size of industry, the larger is mean size), and (b) the more unequal are their sizes. In the case of the Herfindahl index, this relationship can be formalized as:

$$H = (s/S).I \quad (2)$$

where s is mean business size, S is aggregate industry size, and I measures the extent of size inequalities (more precisely, one plus the square of the coefficient of variation.)

Now, if (2) describes the level of concentration in an individual Member State, a weighted average thereof defines the HNAT term in (1).

Re-expressing the two equations in terms of rates of change over a given time period, and substituting (2) into (1), we can write:

$$d(HEU) = d(HNAT) + d(SPEC) + d(NM \quad (3)$$

$$d(HEU) = d(s) - d(S) + d(I) + d(SPEC) + d(N \quad (4)$$

where the d(.) notation defines proportionate growth over the period, and s, S and I should now be thought of as (appropriately weighted) averages across the Member States in the growth rates of mean business size, industry size, and size inequalities.

In words, equation (4) tells us that, in a given industry, EU concentration will increase where[1]:

- mean business size grows more rapidly than industry size in Member States
- business size inequalities within individual Member States increase
- specialization (by Member State within the EU) increases
- intra-EU multinationality increases.

[1] Moreover, the first two factors, but not the last, will also increase typical national concentration.

Annex 3: The econometric analysis of price-cost margins

Through increased competition, the single market is expected to benefit consumers. Rather than the cost savings resulting from reductions in the cost of trade and exploitation of economies of scale being retained by firms, it is hoped that they get passed on to consumers in the form of lower prices.

If the internal market programme has had a pro-competitive effect (bringing firms in different Member States into direct competition where previously non-tariff barriers prevented this) then we would expect price-cost margins to be reduced. Most theories of firm behaviour in oligopolies predict that cost-price margins are negatively related to the number of firms in a market; we can interpret market integration as the unification of previously distinct markets and so an increase in the number of competing firms, with a consequent reduction in margins.

The data for this exercise was drawn from the Eurostat survey of industrial production for the EU 12 for the period 1980-92. This was available at a highly disaggregated level; the 3-digit NACE classification has 115 sectors. This gave a data set of about 8 000 observations. Unfortunately, Spain and Portugal had to be dropped from the analysis due to insufficient data.

Fuller details of the data and reports of relevant econometric results are given in *London Economics* (1996).

The analysis of *London Economics* has been carried out for two definitions of price-cost margins:

m1 = (value added - labour costs) / value added

m2 = (value added - labour costs) / sales

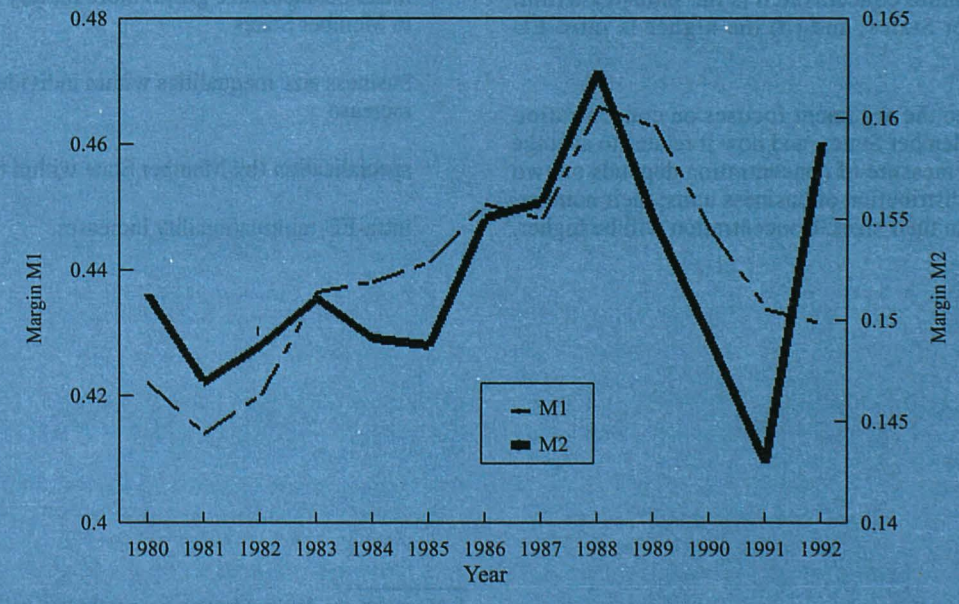
The first definition is often used in empirical studies examining the link between profitability and concentration. The second definition has also been used in empirical studies but less widely. However, it conforms more closely to the theoretical notion of a profit/sales ratio in the economic literature: (p-c) / p. In general, the results are not very sensitive to which definition is used.

The average level of margins in shown in Graph A3.1 below.

A table of summary statistics from which this is drawn is given in *London Economics* (op. cit.).[1] It may be seen that there

[1] In particular the data for 1992 correspond only to France and Denmark.

GRAPH A3.1: **Average margins**



appears to be a positive trend for the early 1980s, though average margins have fallen relative to this trend in the late 1980s. However, margins move in response to the state of the economic cycle: there was a major upturn in the mid 1980s, preceded and followed by major recessions. We correct for this effect later on.

The two different definitions of margins have rather different overall average levels: 44% for the measure M1 and 15% for M2. There is also significant cross-country variation in average margins for the whole sample period. The summary data presented in *London Economics* (op. cit., Annex 2) show that we can group the countries in the following way:

- high margins: Italy, Belgium;
- medium margins: France, Netherlands, UK, Ireland;
- low margins: Germany, Luxembourg, Denmark, Greece.

Interestingly, there is evidence that the cross-country dispersion in margins reduced over the sample period. Graph A3.2 shows a plot of the cross-country variance in margins using the two measures for the period 1980-91. We do not show 1992 due to lack of data. The decline in cross-country dispersion happens from 1987.

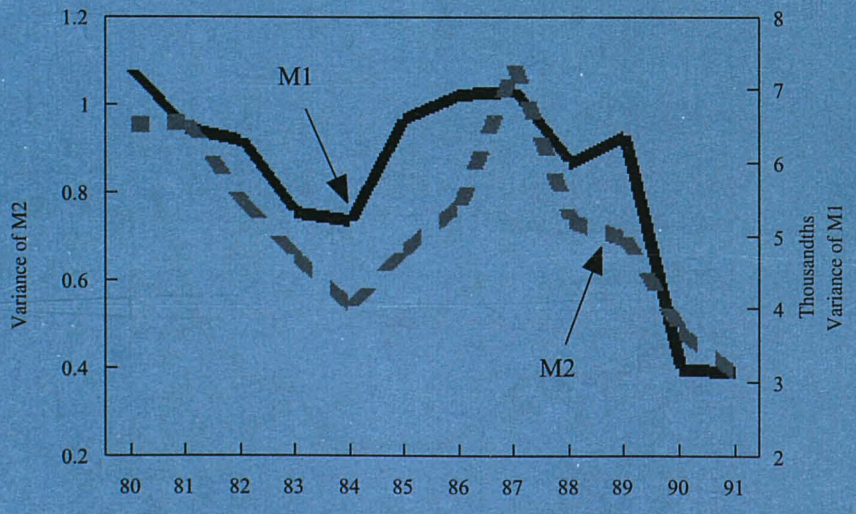
This would be consistent with the internal market programme having an equalizing effect. *London Economics* gives a formal statistical test of this decline in variance, and shows a statistically significant fall in variance at the end of the sample period. We take this as evidence of an impact of the internal market programme (even if slightly lagged), which we would expect to lead to more similar economic outcomes across countries.

Evolution of margins

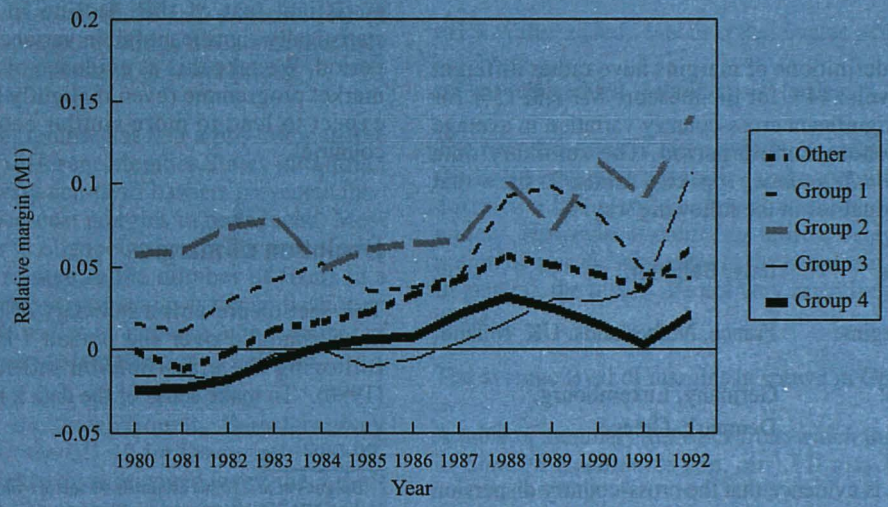
This section presents a summary of the way in which margins have changed over the period 1980-92 by type of sector following the classification introduced by Buigues et al. (1990).[1] To make sense of the data it is necessary to correct it at

[1] Buigues et al. (1990) establish 40 sectors which were particularly sensitive to the SMP. Within this group, four types of sectors are distinguished: Group 1 (high tech public procurement sectors), Groups 2 and 3 (traditional or regulated public procurement sectors) and Group 4 (products with moderate non-tariff barriers).

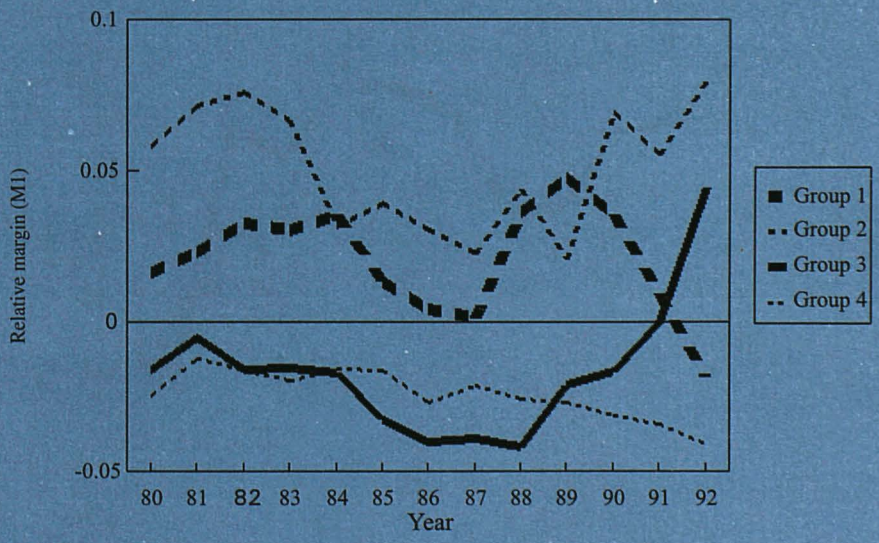
GRAPH A3.2: **Cross-country variance of average margins**



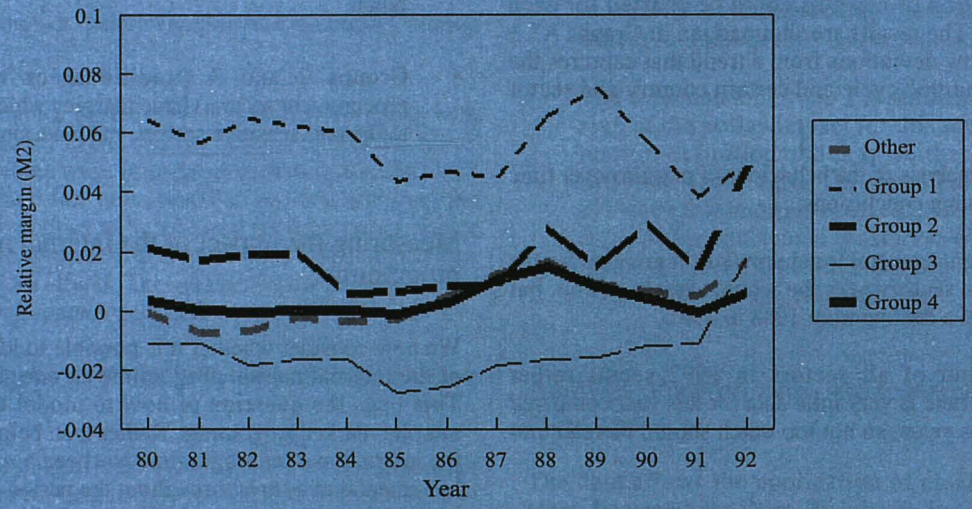
GRAPH A3.3: **Evolution of margins (M1)**
(Controlling for country- and sector-specific effects and cycle)



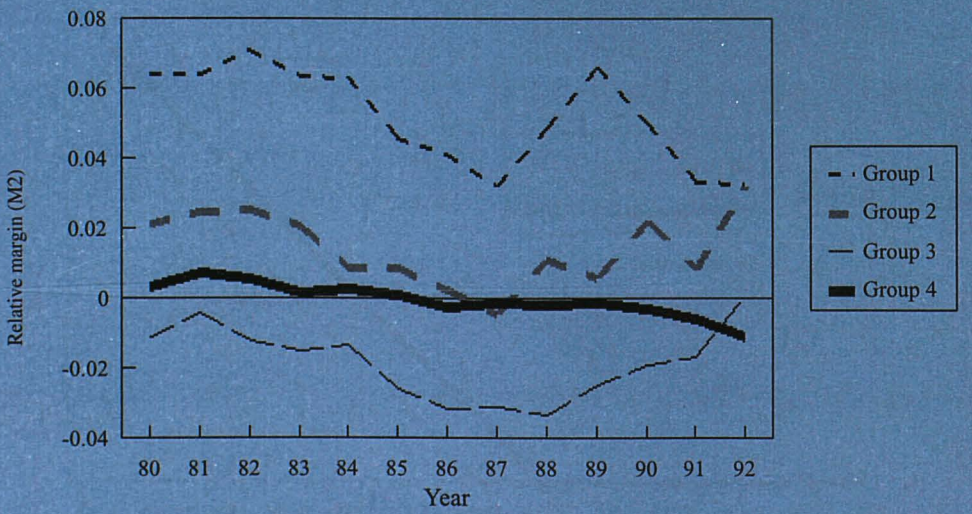
GRAPH A3.4: **Sensitive sectors relative to other sectors**



GRAPH A3.5: **Evolution of margins (M2)**
(Controlling for country- and sector-specific effects and cycle)



GRAPH A3.6: **Sensitive sectors relative to other sectors**



least for the influence of the economic cycle and for country and sector specific effects. This was done using a random effects regression using time dummies; the details of this analysis are reported in *London Economics* (op. cit. Annex 3). Separate time dummies were included for each type of sector, so that the evolution of margins could be charted for each sector separately. The results are summarized in Graphs A3.3 to A3.6 which show deviations from a trend that captures the effects of the economic cycle and certain country and sector specific effects.

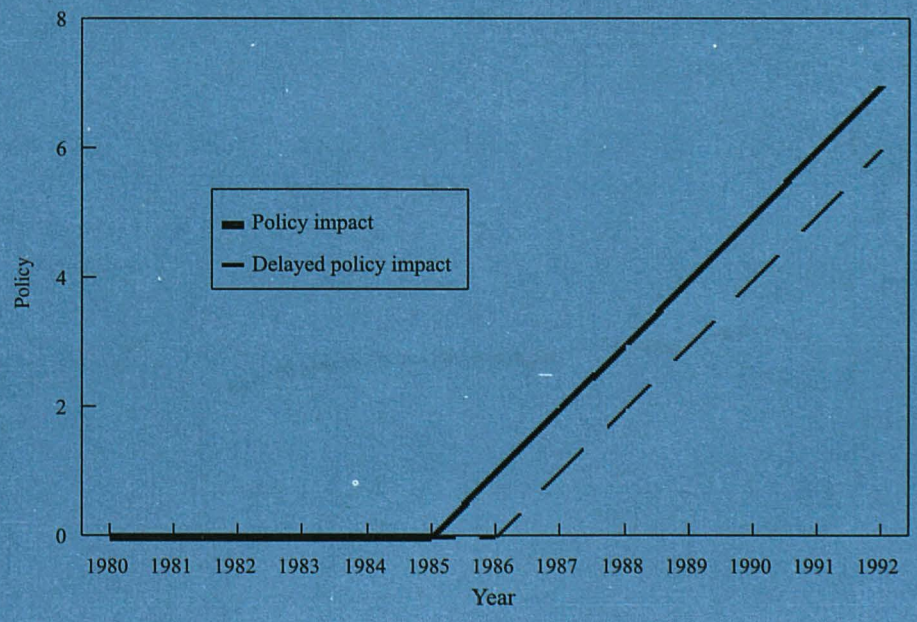
This preliminary analysis of the behaviour of margins over time suggests the following conclusions:

- There has been a general trend upwards in margins for the non-sensitive sectors over the whole sample period, but there has been a decline from 1988 to 1991.
- The behaviour of all sectors in 1992 seems rather anomalous. There is very little data for this year compared with previous years, so not too much should be read into this.
- Group 4 (products with moderate non-tariff barriers) have margins which are falling relative to the non-sensitive sectors, with this relative decline accelerating since 1988.
- Group 1 (hi tech public procurement sectors) have margins which are generally falling relative to the non-sensitive sectors, but most of this decline occurred before 1987. Since 1987, margins have risen for this group relative to the non-sensitive sectors, but subsequently fallen.
- Groups 2 and 3 (traditional or regulated public procurement sectors) have margins which first fell relative to the non-sensitive sectors, but have since risen.

Measuring the impact of the internal market programme

We now consider whether it is possible to identify any impact of the internal market programme on margins from the data. This begs the question of how to model the impact of the internal market programme. Rather than being a 'step' change, the internal market programme has been a rolling sequence of incremental measures throughout the period 1986-92. Without identifying the time at which a particular measure became effective and which sectors it affected, we must use a simple proxy.

GRAPH A3.7: **Definition of policy variable**



We have investigated the use of two alternatives which are illustrated by (see also Graph A3.7):

- a ramped policy variable with an impact starting in 1986;
- a 'delayed impact' policy variable with an impact starting in 1987.

These policy variables were included in regressions along with variable for economic cycle, country specific effects and trend. The policy variables were interacted with dummies for each sensitive group and for 'non-sensitive' sectors, allowing the total impact of the policy to be assessed for each group. Sector specific effects were modelled in a number of alternative ways as fixed and random effects. The details of these regressions are shown in *London Economics* (op. cit. Annex 3).

We find that we may draw the following conclusions from these regressions:

- There is very significant evidence of the internal market programme reducing margins in the non-sensitive sectors and Group 4 even if we assume that there was a impact of the policy from 1986.
- There is even stronger evidence of a policy impact on the non-sensitive sectors and Group 4 if we suppose, as seems reasonable, that there was a short delay of one year before the internal market programme affected firm behaviour.
- There is significant evidence that there was a larger policy impact on Group 4 than on the non-sensitive sectors using the definition of margins M1, but not using M2.
- We would estimate (using the delayed impact) the overall impact of the internal market programme to be as given by the following table:
- The internal market programme does not appear to have affected margins in Groups 2 and 3: they rose at the time of implementation of the programme. This may be understandable if the measures affecting these groups where adopted relatively later in the sample period. There is significant evidence that there has been less policy impact for these sectors than for the non-sensitive sectors.
- The evidence for Group 1 is unfortunately lacking. The sign of the policy impact for this sector depends on the margin definition and is in neither case significantly different from zero. On the other hand there is no evidence that margins evolved differently for this group than for the non-sensitive sectors. We cannot determine with confidence what has happened to margins for Group 1 on the basis of the available data.

Analysis of advertising- and research-intensive industries

The data allows the application of an alternative industry classification (see Box 2) which distinguishes between homogenous goods industries and those that are characterized by heavy expenditure on advertising and R&D. The regressions used the following dummy variables:

A = advertising intensive dummy

R = research intensive dummy

AR = both advertising and research intensive dummy.

The results show that advertising-intensive sectors have had a significantly smaller impact from integration than those sectors which are neither advertising- nor R&D-intensive. This finding is consistent with the hypothesis that in enlarged markets for differentiated goods such as branded consumer goods

Table A3.1

Impact on price-cost margins

	Average level of margin across EU in sample period	Policy impact on non-sensitive sectors	Policy impact on Group 4
Margin definition M1	44.1%	–0.7% per annum	–0.9% per annum
Margin definition M2	15.2%	–0.2% per annum	–0.2% per annum

advertising expenditure is a relatively more important strategic variable than in smaller more protected markets. In the sense that advertising spending can be considered endogenous sunk costs this requires increased margins. Alternatively this finding may indicate that markets served by advertising-intensive industries have become more concentrated and sustain higher price-cost margins. With both explanations, integration suggests a differential response in advertising-intensive industries which is worth taking note of.

Summary

The analysis of price-cost margins presented here shows a significant impact of integration. This is of considerable interest since it shows a direct measure of competition being affected by integration, rather than looking at indirect measures (such as trade flows, price dispersion, etc.). Although we cannot ascribe the fall in margins for some sectors since 1986 to the effects of integration with certainty, the timing of this fall strongly suggests that integration measures are the cause: the response in margins followed with a short lag after the start of the internal market programme.

Interestingly, not all sectors have been affected equally. The sensitive sectors in Group 4 have been most affected by integration, the non-sensitive sectors have been affected, but somewhat less. Groups 2 and 3 appear not to have been significantly affected by integration. The data does not allow us to identify what has happened to the Group 1 sectors. This accords with some, but not all, of the original expectations of Buigues et al. Group 4 includes sectors which are traded and had moderate non-tariff barriers, so should have experienced an impact from integration. The lack of an impact for Groups 2 and 3 supports that the internal market programme has not affected public procurement markets, despite the expectations of Buigues et al.

Annex 4: Price convergence in the EU

4.1. Price convergence and exchange rates

The first section of this appendix examines to which extent the convergence/divergence patterns observed for broad categories of products and services from 1990 to 1993 could have reflected the volatile developments occurring on the European exchange rates front in late 1992 and 1993. This period was characterized by the strong devaluation of the currency of five out of the 10 EMS Members, most notably the peseta, the lira and the pound sterling, having as a consequence for the lira and the sterling their departure from the EMS system. In particular, it can be suggested that the price convergence trend observed at the EU level for certain goods could have been substantially driven by these currency devaluations as they might have pushed down prices from 1990 to 1993 in the countries where such devaluations occurred.

In order to eliminate any possible exchange rate effects on price convergence/divergence trends, coefficients of price variation in 1993 were calculated using price indices from which the variation of EU countries' currencies against the ecu from 1990 to 1993 was excluded. This procedure was applied to all product/service categories for each of the 12 EU member countries in 1993. For example, price indices in 1993 for Italy were increased by 20.1%, which represents the lira's devaluation in percentage terms against the ecu from 1990 to 1993. These price indices corrected for nominal exchange rate variations were then used to calculate new price dispersion coefficients in 1993.

Table A4.1 compares, for the broad product/service categories in 1993, the coefficients of price dispersion calculated in this report with the price dispersion coefficients adjusted for exchange rate fluctuations. It reveals that the price convergence/divergence patterns from 1990 to 1993 for broad categories were not affected by the adjustment procedure. Categories that were characterized by a price convergence still conform to that trend. The same holds for categories that have followed a price divergence pattern, i.e. the correction did not alter the trend.

4.2. The econometric analysis of price convergence

The impact of EU integration on price dispersion across countries is very complex. Not only structural but also behavioural and policy factors interact in determining the degree of price disparity at the EU level.

The objective of this econometric analysis is to shed some light on the relative importance of various factors in explaining the observed dispersion of prices across product categories.

Table A4.1

Coefficients of price variation for selected groupings: actual versus adjusted for exchange rate movements, 1993

	1990	1993 (actual)	1993 (adjusted)
EU 6			
Consumer goods	13.5	12.4	13.0
Services	20.0	21.3	21.5
Energy	19.4	24.3	25.7
Equipment goods	11.6	12.5	14.5
Construction	14.0	19.1	16.2
EU 9			
Consumer goods	20.3	18.0	17.7
Services	24.6	23.4	22.6
Energy	24.7	30.6	29.0
Equipment goods	12.2	12.9	14.6
Construction	16.5	22.4	18.4
EU 12			
Consumer goods	22.8	19.6	19.6
Services	31.8	28.6	26.5
Energy	28.0	31.7	29.7
Equipment goods	13.1	14.5	18.0
Construction	23.5	27.4	24.1

Several hypotheses have been tested:

(a) To what extent are the effects of the internal market programme already strong enough and sufficiently diffused as to induce a shift in the estimated parameters over the period 1980-93?

(b) To what extent is the distinction between, on the one hand, markets characterized by exogenous sunk costs (homogeneous or horizontally differentiated product markets) and, on the other hand, markets characterized by endogenous sunk costs (vertically differentiated product markets) validated by the empirical estimation?

(c) To what extent do markets characterized by moderate or high NTBs behave differently from markets characterized by low NTBs?

(d) What is the respective role of barriers to the arbitrage process, of the nature of competition in the market and intensity of competition in explaining the observed dispersion of prices?

The dependent variable in the econometric regressions is the coefficient of variation of the price indices inclusive of taxes at the EU 9 level.

Three groups of explanatory variables are considered.

The first one includes the structural and quantifiable policy factors affecting the arbitraging process:

(a) The disparity in fiscal policy across the EU countries (CVAT) is measured by the coefficient of variation of the VAT rates applied in each country.

(b) The disparity of demand across EU countries (CWEIGHT) is measured by the coefficient of variation of the shares of national consumption of the product considered in total national consumption.

(c) The existence of non-tariff barriers (NTB) is measured by a variable which takes the value 0 if non-tariff barriers are low, the value 1 if non-tariff barriers are moderate and the value 2 if non-tariff barriers are high. This information is available at the NACE three digit level.[1]

These three variables are expected to exert a positive impact on the price dispersion across countries.

The second group of variables includes variables describing the nature of competition in each market. These variables, which are supposed to describe structural characteristics of the market, do not vary over time. This means that we do not take into account changes in these structural characteristics resulting from strategic adaptation to a new competitive environment. Furthermore, due to lack of data, we had, for some variables, to rely on national data. The hypothesis we have then to make is that the variation across product categories at the EU 9 level is the same as the variation observed at national level.

This second group of variables includes:

(a) The importance of exogenous sunk costs (Messize), measured by the extent of economies of scale relative to the size of the market. This proxy has been calculated, on the basis of UK data, as the share of the minimum efficient size in the value of production. The minimum efficient size is the average size of the largest plants accounting for 50% of the value of production.

(b) The importance of endogenous sunk costs (ADV), measured by the ratio of advertising to sales in France in 1990.

(c) The extent of vertical differentiation (ASHCDV), measured for each product category by the EU 9 average in 1993 of the shares of vertically differentiated trade in intra-EU imports.[2]

The expected impact of the importance of economies of scale is ambiguous, as discussed in DRI (op. cit.). High economies of scale limit the number of firms active in a market. They can induce firms to standardize their production and increase the geographic market in which they sell in order to better exploit these economies of scale. However, when cooperative behaviour is sustained by high transport costs or by a protective regulatory environment, dispersion of prices between markets will persist over time.

The expected impact of ADV is positive as it measures the extent of brand competition and hence consumer inertia between suppliers.

The extent of vertically differentiated intra-industry trade (ASHCDV) is also expected to increase price dispersion across countries as it reveals competition based on quality rather than price alone.

The third group of variables includes variables describing the extent of competition in each product category:

(a) Intra-EU import penetration (INTRA) is the share of intra-EU imports in total EU apparent consumption (sales minus exports plus imports) at the NACE three digit level.

(b) Extra-EU import penetration (EXTRA) is the share of extra-EU imports in total apparent consumption. Measures of import penetration at the level of our product classification have been calculated as the ratio of imports for the relevant products divided by total consumption expenditures on these products (TMINTRA and TMEXTRA). However, without information on the share of imports which goes to final consumption, these ratios exceed the true penetration level in several cases, such as sugar, dried vegetables or fruits, fats, tyres, etc. These ratios even take values higher than 100 for some products.

(c) C4FR is the share in total sales of the four largest firms in France in 1990 at the NAP600 level.

(d) C5UK is the share of the five leading firms in total sales in the UK in 1990 at the NACE three digit level.

(e) HEU is a proxy for concentration at the EU level[3] measured by the Herfindhal index at the NACE three digit level.

(f) A proxy for multinationalization in a given industry,[3] is measured as the weighted average of the degrees of

[1] This variable comes from Buigues, P. and Ilkovitz, A. (1988), 'The sectoral impact of the internal market', Commission of the European Communities document, vol. 2, No 335.

[2] This variable has been kindly supplied by CEPII.

[3] See Davies, S. and Lyons, B. (op. cit.).

multinationality for constituent firms in each NACE three digit industry.

INTRA and EXTRA are expected to decrease price disparity across EU countries as they reveal the extent of competitive pressure associated with the presence of foreign suppliers.

The expected impact of national degrees of concentration is difficult to predict. Ideally, one should have introduced a variable measuring the disparity in national concentration degrees. Differences in the published indices at the national level (C4 in France, C3 or C6 in Germany, C5 in the UK) and in the classification used (NAP600 for France, SYPRO 4 digit for Germany and NACE 3 digit for the UK), however, prevented the construction of such a variable.

The correlation coefficient between C4FR and C5UK is equal to .73, revealing that the ranking of product categories according to the degree of concentration is quite similar between these two countries. We tried both variables as C4FR is available at a more detailed level than C5UK.

High degrees of concentration reveal the existence of potential market power in the national market and hence ability to price discriminate. High degree of concentration might, however, when preferences are biased towards national production, also increase the cost of entry for foreign suppliers.

Concentration at the European level, on the other hand, suggests high mutual recognition between the players.

As these concentration variables are measured in one specific year, we do not take into account consolidation processes which may have been under way in some markets, partly in anticipation to the single market. One example of such market restructuring is detailed in the white goods case study.[1]

The extent of multinationality in a given sector reveals the ability of firms to organize themselves on a pan-European basis. The impact on price disparity can be positive or negative depending on whether firms choose to exploit the differences among markets (by selling the same product under different brand names) or to exploit the economies of scale by adopting a uniform marketing approach across the EU countries. Furthermore, an extensive presence of multinationals also questions the competitive pressure associated with the rate of import penetration, as these imports could mainly be intra-firm trade.

Tests of the stability of the coefficients over time allow us to pool the data.[2] This indicates that the completion of the internal market has not had such an effect as leading to coefficients significantly different in the more recent years as compared with the beginning of the period. Depending on the set of explanatory variables, the sample covers between 253 and 316 observations concerning only consumer goods products.[3] About one third of the observed variance of the dependent variable is explained by the independent variables.

Results of the econometric analysis

Table A4.2. presents the results for the whole sample. Disparity in fiscal policies (CVAT) and in consumer preferences (CWEIGHT) as well as the existence of non-tariff barriers (NTBs) exert, as expected, a significant positive impact on price disparity across EU countries. The importance of disparity in consumer preferences is approximately twice as high as the importance of disparity in fiscal policies.[4]

Among the variables describing the nature of competition, vertical differentiation (ASHCDV) exerts a significant positive impact on price disparity, whose importance is similar to the importance of the disparity in preferences variable.

The coefficient of the economies of scale variable (MESSIZE) is also positive but not always significant. The importance of the advertising to sales ratio significantly leads to increased price dispersion across EU countries only when the import penetration variables are not included in the specification.[5]

Among the variables describing the extent of competition, there are two which tend to decrease significantly the price disparity across the EU. These are the rate of import penetration, either from other EU countries (INTRA) or from countries outside the EU (EXTRA), as well as the extent of multinationalization (M). On the other hand, the degree of national concentration, measured either by C4FR or C5UK, exerts a significant positive impact on price disparity (implying that high degrees of national concentration are associated with high price disparities across the EU).

[1] Whilst 150 white goods producers supplied 3/4 of the market in 1985, 15 international groups controlled 80% by 1990 and seven groups had 86% by 1995. This consolidation which occurred essentially through acquisitions, is driven by economies of scale, just-in-time logistics and consolidation of component supply.

[2] According to the specification, the F test takes a value which varies between 1.04 and 1.11. This value is well below the significance level, indicating that allowing the coefficients to vary over time does not improve significantly the results of the estimation. Distinguishing between 1980 and 1985, on the one hand, and 1990 and 1993, on the other hand, also leads to the conclusion that the coefficients do not differ significantly between these two periods (F=1.33 or 1.35). This is not really surprising as the speed of adjustments to the internal market situation varies between markets.

[3] Price indices for equipment goods and construction goods are net of VAT. Furthermore, competition in these markets obeys different rules than those observed in consumer goods markets, due to differences in the buying side of the market and in the importance of regulatory policies.

[4] Except when TMINTRA and TMEXTRA are used as indicators of foreign competitive pressure.

[5] Or when TMINTRA or TMEXTRA are used as indicators of import penetration ratios.

Table A4.2

Regression analysis of price disparity across the EU 9

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
Constant	2.0	2.8	5.9	5.1	1.9	2.4	6.3	5.3	0.73	1.07
	(0.8)	(1.1)	(1.9)*	(1.9)*	(0.8)	(1.0)	(2.2)*	(2.1)*	(.3)	(0.4)
CVAT	0.058	0.065	0.053	0.052	0.080	0.080	0.080	0.076	0.096	0.097
	(3.8)**	(4.4)**	(3.4)**	(3.4)**	(4.7)**	(5.0)**	(4.4)**	(4.4)**	(5.7)**	(5.8)**
CWEIGHT	0.130	0.129	0.135	0.135	0.120	0.121	0.125	0.124	0.104	0.102
	(7.2)**	(7.1)**	(7.4)**	(7.4)**	(6.5)**	(6.5)**	(6.7)**	(6.7)**	(5.1)**	(5.1)**
ASHDV	0.139	0.131	0.112	0.117	0.135	0.129	0.125	0.108	0.117	0.116
	(4.4)**	(4.2)**	(3.5)**	(3.8)**	(4.3)**	(4.1)**	(3.2)**	(3.5)**	(3.5)**	(3.5)**
MESSIZE	0.367	0.329	0.136	0.163	0.389	0.313	0.136	0.185	0.103	0.117
	(2.0)*	(1.8)	(0.8)	(1.1)	(2.2)*	(1.8)	(0.8)	(1.2)	(0.6)	(0.7)
ADV	0.217	0.218	0.138	0.155	0.179	0.194	0.123	0.146	0.463	0.445
	(1.5)	(1.5)	(0.9)	(1.0)	(1.1)	(1.2)	(0.7)	(0.9)	(3.1)**	(3.0)**
EXTRA	−0.097	−0.115			−0.116	−0.126				
	(−2.3)*	(−2.9)**			(−3.0)**	(−3.3)**				
INTRA			−0.203	−0.180			−0.221	−0.189		
			(3.1)**	(−3.9)**			(−3.4)**	(−3.9)**		
TMEXTRA									−0.009	
									(−.23)	
TMINTRA										−0.032
										(−.73)
M	−0.048	−0.061	−0.054	−0.049	−0.069	−0.082	−0.073	−0.065	−0.095	−0.095
	(−1.7)	(−2.3)**	(−1.9)*	(−1.8)	(−2.2)*	(−2.7)**	(−2.3)**	(−2.2)*	(−2.8)**	(−2.7)**
HEU	−0.301		0.148		−0.280		0.208			
	(−1.4)		(0.5)		(−1.3)		(.7)			
C4FR					0.067	0.060	0.066	0.069	0.065	0.066
					(2.7)**	(2.5)**	(2.6)**	(2.8)**	(2.5)**	(2.6)**
C5UK	0.066	0.05	0.075	0.080						
	(1.8)	(1.4)	(2.2)*	(2.5)**						
NTB	1.62	1.40	1.18	1.29	1.79	1.59	1.34	1.51	2.11	2.13
	(2.3)**	(2.1)*	(0.5)	(1.9)*	(2.5)**	(2.3)**	(1.8)	(2.2)*	(2.9)**	(2.9)**
N	310	310	308	308	298	298	296	296	253	253
F	14.5	15.8	15.0	16.7	13.9	15.2	14.2	15.7	12	12.1
ADJ R2	0.30	0.30	0.31	0.31	0.30	0.30	0.31	0.31	0.28	0.28

Source: DRI.

In a second step, the sample has been split in two groups of markets. The first one includes the markets where non-tariff barriers have been estimated to be low (NTB=0) whilst the second group covers the markets where non-tariff barriers have been estimated to be moderate or high (NTB>0).

F tests of homogeneity of the coefficients between the two subsamples show that these coefficients are significantly different between the two subsamples.[1] The results of the estimations in this case are presented in Table A4.3.

The main differences between the two types of sectors are the following: in markets in which NTBs are low, disparity in preferences and the share of vertically differentiated intra-industry trade in the EU exert a positive impact on price dispersion, whilst disparity in fiscal policies has a very low impact and national concentration no significant impact at all. On the other hand, in markets characterized by moderate or high NTBs, disparity in fiscal policies and national concentration both exert a significant positive impact on price disparity, whilst the coefficient of the disparity in preferences variable is not significant.

This confirms that when non-tariff barriers are ineffective, national structures and regulations lose their effectiveness. Objective factors such as disparity in preferences or vertical

[1] These tests take values between 3.03 and 3.97, depending on the variables introduced in the specification, values which are largely above the significance level at 1%.

Table A4.3

Regression analysis of price disparity across the EU 9

	NTB=0				NTB>0			
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Constant	1.7	4.5	3.3	7.0	3.0	10.2	–0.01	2.9
	(0.5)	(1.0)	(1.0)	(1.8)	(0.7)	(1.9)*	(–0.02)	(0.5)
CVAT	0.039	0.035	0.046	0.042	0.134	0.120	0.189	0.183
	(1.8)*	(1.6)	(2.0)*	(1.8)*	(4.4)**	(3.9)**	(5.9)**	(5.6)**
CWEIGHT	0.154	0.159	0.142	0.147	0.018	0.036	0.004	0.007
	(6.9)**	(7.1)**	(6.4)**	(6.5)**	(0.5)	(1.0)	(0.1)	(0.2)
ASHDV	0.151	0.128	0.140	0.109	0.087	0.059	0.152	0.133
	(3.6)**	(2.8)**	(3.3)**	(2.5)**	(1.5)	(0.8)	(2.4)**	(1.9)*
MESSIZE	0.332	0.107	0.473	0.201	–0.275	0.168	–0.237	–0.358
	(1.4)	(0.6)	(2.3)*	(1.1)	(–0.5)	(0.3)	(–0.5)	(–0.6)
ADV	0.036	0.006	–0.015	–0.046	0.517	–0.017	0.983	0.817
	(0.2)	(0.1)	(–0.1)	(–0.2)	(1.2)	(–0.1)	(2.4)**	(1.8)
EXTRA	–0.101		–0.140		0.021		–0.015	
	(–1.3)		(–1.9)*		(0.3)		(–0.3)	
INTRA		–.161		–0.203		–0.179		–0.096
		(–1.6)		(–2.0)*		(–1.7)		(–0.9)
M	–0.049	–0.050	–0.045	–0.036	–0.007	–0.036	–0.071	–0.077
	(–1.1)	(–1.1)	(–0.9)	(–0.8)	(–0.1)	(–0.8)	(–1.7)	(–1.7)
HEU	0.487	0.775	0.586	0.909	–0.794	–0.436	–0.511	–0.205
	(1.3)	(1.7)	(1.5)	(1.9)*	(–2.1)*	(–0.9)	(–1.6)	(–0.5)
C4FR			.033	.033			0.148	0.143
			(1.0)	(1.0)			(4.1)**	(3.7)**
C5UK	0.070	0.070			0.194	0.152		
	(1.4)	(1.6)			(2.7)**	(2.5)**		
n	184	184	176	176	126	124	122	120
F	8.6	8.8	7.6	7.7	12.3	12.7	13.4	13.7
adj R2	0.27	0.28	0.25	0.26	0.45	0.46	0.48	0.49

Source: DRI.

differentiation are then the driving factors explaining the observed price disparity.

A third step has been to split the sample between homogeneous and horizontally differentiated goods and goods differentiated on the basis of intensity in R&D and advertising expenditures (as a proxy for vertically differentiated goods) (Table A4.4.).

F tests of homogeneity of the coefficients between the two subsamples show that the coefficients are significantly different between the two subsamples.[1]

In this case, disparities in fiscal policy and in preferences exert the same positive effect on price dispersion in the two subsamples. ASHCDV, on the other hand, exerts a positive and significant impact only in the markets that are not intensive in research or advertising. Markets which show a discrepancy between the observed and the estimated dispersion of prices higher than .10 in two years or more are the following: fresh and frozen fish, other seafood, books.

Differentiating further among the markets of differentiated products by considering separately the markets which are both research and advertising intensive,[2] confirms the differences between these two types of markets (Table A4.5.).

In markets which are both research and advertising intensive, more than 70% of the variance of the dependent variable is explained by the explanatory variables. However, severe multicollinearity problems[3] affect the standard errors of the

[1] These tests take values between 1.85 and 2.55, depending on the variables introduced in the specification, values which are above the significance level at 1% for the specifications including C5UK and above the 5% significance level for the specifications including C4FR.

[2] The F tests on the splitting in three groups take values between 3.1 and 3.9, above the significance level at 1%.

[3] The correlation between INTRA and MESSIZE, INTRA and HEU and HEU and MESSIZE is higher than .90!

Table A4.4

Regression analysis of price disparity across the EU 9

	Non intensive in R&D or ADV				Intensive in ADV and/or R&D			
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Constant	−11.9	−10.4	−5.7	−8.7	1.58	8.36	5.0	11.7
	(−1.4)	(−1.5)	(−1.1)	(−1.4)	(0.3)	(1.5)	(1.3)	(2.7)**
CVAT	0.075	0.081	0.089	0.107	0.057	0.061	0.075	0.079
	(2.5)**	(2.2)*	(2.4)**	(2.5)**	(2.9)**	(3.1)**	(3.4)**	(3.6)**
CWEIGHT	0.060	0.064	0.069	0.063	0.133	0.138	0.126	0.132
	(2.0)*	(1.9)*	(2.1)*	(1.8)	(5.5)**	(5.7)**	(5.1)**	(5.3)**
ASHDV	0.409	0.400	0.336	0.369	0.031	0.004	0.036	0.001
	(3.8)**	(4.0)**	(3.9)**	(3.8)**	(0.7)	(0.1)	(0.8)	(0.1)
MESSIZE	1.269	1.336	1.309	1.464	0.558	0.273	0.710	0.237
	(1.9)*	(1.9)*	(1.9)	(2.0)*	(2.0)*	(1.1)	(2.4)**	(0.8)
ADV	−0.951	−0.892	−0.490	−0.650	0.271	0.125	0.165	0.027
	(−0.95)	(−0.92)	(−0.49)	(−0.65)	(1.58)	(0.69)	(0.94)	(0.14)
EXTRA	0.039		−.0020		−0.082		−0.145	
	(0.37)		(−0.02)		(−1.36)		(−3.20)**	
INTRA		0.044		0.099		−0.258		−0.336
		(0.31)		(0.69)		(−2.5)**		(−3.9)**
M	0.196	0.148	0.062	0.038	−3.780	−0.055	−0.062	−0.073
	(1.2)	(1.0)	(0.5)	(0.3)	(0−.8)	(−1.2)	(−1.4)	(−1.7)
HEU	−7.600	−7.140	−6.650	−8.180	−0.325	0.426	−0.192	0.703
	(−1.3)	(−1.3)	(−1.0)	(−1.2)	(−1.3)	(1.0)	(−0.8)	(1.9)*
C4FR			0.056	0.073			0.059	0.036
			(0.5)	(0.6)			(1.9)*	(1.2)
C5UK	0.159	0.110			0.103	0.075		
	(0.9)	(0.7)			(1.7)	(1.4)		
NTB	1.500	1.110	0.870	−0.436	2.010	1.180	1.890	0.950
	(0.6)	(0.4)	(0.3)	(−.0.1)	(2.4)**	(1.3)	(2.2)*	(1.0)
N	108	108	104	104	202	200	194	192
F	5.9	5.9	5.2	5.3	11.8	12.4	10.7	11.5
ADJ R2	0.31	0.31	0.29	0.29	0.35	0.36	0.34	0.35

Source: DRI.

estimates and hence the significance level of several coefficients.

Disparity of fiscal policies and the rate of imports coming from extra-EU countries exert a significant positive impact on the price dispersion whilst economies of scale have a negative impact. On the other hand, disparity of preferences have no significant impact. The positive impact of imports coming from outside the EU suggests that, in these types of markets, imports being essentially of an intra-firm type do not increase the competitive pressure. The negative impact of economies of scale might reflect the incentive to adopt pan-European marketing strategies in order to exploit better these economies of scale.[1]

In markets which are either research or advertising intensive, disparity of fiscal policies is not significant but disparity of preferences exert a positive and significant impact, in line with the suggestion that some of these markets are horizontally differentiated markets. The coefficients of the import penetration variables, when significant, are negative. Among these markets, the following show a discrepancy between the observed and the estimated dispersion of prices higher than .10 in two years or more: preserved milk, cocoa, condiments and sauces, mineral waters, alcoholic beverages, orthopaedic and therapeutic appliances and products.

In conclusion, the results of the regressions suggest:

(a) That objective factors, such as structural factors hindering the arbitraging process or leading to a competitive process based more on quality than on price, explain a significant part of the variation in price disparity in the EU 9 across product categories. Concentration in national markets

[1] See 'The white goods', case study of DRI (volume II).

Table A4.5

Regression analysis of price disparity across the EU 9

	Intensive in R&D or ADV				Intensive in ADV and/or R&D			
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Constant	−3.8	−3.8	13.7	16.8	18.2	35.9	18.2	8.1
	(−0.4)	(−0.4)	(2.3)*	(2.6)**	(0.6)	(1.1)	(2.7)**	(1.3)
CVAT	−0.019	−0.016	0.030	0.052	0.202	0.219	0.217	0.235
	(−0.4)	(−0.3)	(0.6)	(1.2)	(8.4)**	(9.0)**	(10.8)**	(11.3)*
CWEIGHT	0.176	0.175	0.162	0.158	0.032	0.032	0.058	0.054
	(5.8)**	(5.8)**	(5.0)**	(5.0)**	(1.0)	(1.1)	(1.8)	(1.7)
ASHDV	0.046	0.040	−0.068	−0.117	0.010	−0.023	0.076	0.036
	(0.5)	(0.4)	(−0.9)	(−1.5)	(0.2)	(−0.5)	(1.6)	(0.6)
MESSIZE	0.357	0.179	1.222	0.448	−2.340	−5.68	−2.23	−3.200
	(0.8)	(0.6)	(2.7)**	(1.1)	(−1.3)	(−2.5)**	(−2.8)**	(−2.9)**
ADV	0.600	0.582	0.188	0.076	0.038	0.979	0.233	0.316
	(2.0)*	(1.9)*	(0.7)	(0.3)	(0.5)	(1.2)	(0.9)	(1.1)
EXTRA	−.0680		−0.258		0.153		0.125	
	(−0.6)		(−2.7)**		(2.3)*		(1.9)*	
INTRA		−0.071		−0.369		0.057		0.090
		(−0.4)		(−2.9)**		(0.6)		(1.0)
M	0.002	0.016	−0.168	−0.147	−.1510	−0.239	−0.242	−0.076
	(0.1)	(0.1)	(−1.5)	(−1.3)	(−0.5)	(−0.8)	(−4.5)**	(−1.0)
HEU	0.239	5.170	−0.559	1.990	0.186	3.460	0.075	1.168
	(0.3)	(0.5)	(0.6)	(2.2)*	(0.1)	(1.8)	(.21)	(1.3)
C4FR			0.007	0.032			0.083	0.059
			(0.1)	(0.7)			(2.3)*	(1.5)
C5UK	0.228	0.235			0.098	−0.290		
	(2.6)**	(2.5)**			(0.3)	(−0.8)		
NTB	−0.420	−0.680	−0.090	−1.100	0.950	4.050	0.706	3.680
	(−0.3)	(−0.5)	(−0.1)	(−0.8)	(0.4)	(1.6)	(0.4)	(1.5)
N	128	128	120	120	74	72	74	72
F	8.1	8.0	6.2	6.4	18.1	20.5	20.2	21.2
ADJ R2	0.36	0.35	0.31	0.31	0.70	0.73	0.72	0.74

Source: DRI.

favours price disparity whilst internationalization of the markets either through import penetration or through the presence of multinational firms tends to decrease price disparity. Finally, the existence of high or moderate non-tariff barriers leads to a higher dispersion of prices across countries.

(b) That the effects of the internal market have either not been strong enough or have been too concentrated over a short period (or have not been realized yet) to translate into a significant shift in the estimated parameters over the period considered.

(c) That the theoretical distinction between markets characterized by endogenous sunk costs and the other types of markets is validated by the data.

(d) That markets characterized by moderate or high NTBs behave differently than markets where these NTBs are considered to be low. National concentration increases significantly price dispersion only in the former.

The completion of the internal market, following the elimination of non-tariff barriers between EU countries, will hence lead to a higher degree of price convergence between countries as far as it promotes the competitive pressure by imports and decreases the disparity in consumers preferences between countries.

There are a number of remaining potentially important explanatory factors which could not be included in the estimation. With the exception of transport costs, the factors which could not be included are mainly behavioural and policy factors. Among the factors mentioned in the theoretical approach and in the case studies developed by DRI (op. cit.), the following ones could play a significant role in explaining observed price disparities: asymmetries between firms, mergers and acquisitions, nature and evolution of the distribution

structure and disparity in policy regulations. Some of these have been examined in more detail through the case studies presented in DRI (op. cit.).

Asymmetries between firms based on historical events (such as in the European cola beverages market) or on strategic behaviour (such as in the ready-to-eat cereals market) may prevent arbitraging from taking place. Strategic reactions, driven by the anticipation of the completion of the internal market and leading to the consolidation of market structures through mergers and acquisitions and the dominance by a few big players, could also decrease the ability for buyers to engage in arbitraging. Changes in the structure of distribution (mainly through the creation of buying networks at the EU level) could, on the other hand, increase the power of retailers and allow them to profitably engage in arbitraging.

The case studies undertaken by DRI (1996) suggest that there are remaining policy factors segmenting the markets, either because of differences in regulations (e.g. the product definition in the mineral water market varies between countries) or because of different degrees of stringency in their application (e.g. environmental regulation). Further harmonization of EU regulations and a stricter monitoring of implementation could help reduce such segmentation and favour pan-Europeanization of markets.

Chapter 6 — Income and employment effects

Contents

Chapter 6

Income and employment effects

6.1. Introduction

The previous three chapters provided an analysis of the main ways in which the SMP impacted on different segments of the European economy. This predominantly microeconomic analysis produced many interesting results which provide evidence about the changes to the EU economy set in motion by the SMP. In this chapter, we attempt to put together these different elements so as to furnish a coherent *ex-post* quantitative macroeconomic assessment of the SMP.

Providing an *ex-post* quantitative macroeconomic assessment of the SMP is a difficult task for both methodological and empirical reasons.

Quantification of the SMP effect raises the *anti-monde* problem, i.e. estimating what the world would have looked like in the absence of the SMP. There are several possible methods for tackling this problem, each with its own advantages and disadvantages. Based on the recommendation of Baldwin and Venables (1994), the method adopted here is the simulated *anti-monde*, which involves simulating highly complex models of the economy.

Two types of models can be used for simulating the *anti-monde*: macro models and computable general equilibrium (CGE) models. The advantage of macro models for simulating the *anti-monde* is that they are specially designed to evaluate macro variables such as income and employment. The inherent weakness of this approach, however, is the difficulty of introducing the first-round impact of a fundamentally microeconomic phenomena, such as the SMP, on intermediate macro variables. This entails the risk of inconsistency between model inputs. Macro models were used in the Cecchini report for estimating the *ex-ante* impact of the SMP. Using modified versions of the EC Hermes and OECD interlink models, the Cecchini report estimated that the completion of the internal market had the potential of raising, in the medium term (technically defined as six years), the level of GDP by somewhere between 3.2 to 5.7% above the level that would prevail in the absence of the SMP.

The main advantages of CGE models are that they are based on clear microeconomic foundations and trace the effects of policy changes on the whole economy in a consistent fashion. These models take into account the constraint imposed by the availability of factors of production on the sectoral allocation of resources. For instance, they recognize that the expansion of economic activity which may be implied by the SMP in some sectors may be constrained by the availability of scarce production factors used in other sectors. On the other hand, the sectoral disaggregation of CGE models implies a heavy data requirement that may stretch actual availability. Computable general equilibrium models have become the main instrument in *ex-ante* evaluation of microeconomic policy reforms. They have been used by several authors (after publication of the Cecchini report) for estimating the potential effect of the SMP. Estimates for the level of GDP range between 0.5 and 1.5% above the level in the *anti-monde*, i.e. in the absence of the SMP. The fact that this figure is substantially lower than in the Cecchini report is generally attributed to the general equilibrium nature of these models which imposes constraints on the use of limited resources.

Another methodological problem relates to the fact that the use of simulated models (regardless of whether they belong to the macro or CGE variety) for assessing a regime change like the SMP suffers from the inherent difficulty of incorporating such change in the model. The normal practice is to represent the SMP via a modification in a small subset of model parameters. However, it may be that a regime change of the magnitude of the SMP involves a more fundamental modification in the model structure. In other words, the model builder may not be capable of adjusting his/her model to reflect a regime change like the SMP, in which case the results produced by the model would be of little utility.

Besides these numerous methodological problems, the *ex-post* quantitative macroeconomic assessment of the SMP is also affected by empirical difficulties. The main problem lies in the fact that the analysis in Chapters 4 to 6 is largely qualitative, at least as far as the needs of the models are concerned. Translating such analysis into quantitative estimates to be used as inputs for a simulation model necessarily involves some dose of arbitrary judgment.

For all these reasons, the assessment provided in this chapter should be viewed more as a check on the coherence of the messages contained in the previous chapters than as an attempt to quantitatively estimate the macroeconomic impact of the SMP.

6.2. The *ex post* experiment

The policy change implied by the SMP comprises of the measures designed for removing physical, technical and fiscal barriers to the free circulation of goods, services and production factors within the EC. This policy change can be expected to affect GDP, the key macroeconomic variable, thanks to allocation and accumulation effects. The former operates through improved specialization and greater competition, both of which imply a reallocation of resources,

increased trade and investment flows, and ultimately higher income thanks to greater efficiency. On the other hand, the accumulation effect results from higher investment (medium-run growth effect) and from higher technical progress or total factor productivity (TFP) growth (long-run growth effect) that may be generated by the SMP through changes in the economic environment.

Ideally, therefore, the evaluation of the SMP requires models that are able to trace the impact of the removal of barriers on GDP via intermediate variables — such as trade, investment, the degree of competition or TFP — reflecting the allocation and accumulation effects.

In the present study, two models are used for the *ex-post* quantitative macroeconomic assessment of the SMP, both of which fall short of the ideal requirement.

The first, called GEM-E3-IM, is a multi-country, multi-sectoral dynamic CGE model of EU 12 and the rest of the world. It comes close to meeting the ideal requirement in so far as it explicitly models the SMP barriers and allows for the endogenous determination of some intermediate variables (such as trade and investment). However, the degree of competition is exogenous. Technical progress is also exogenous since the model does not allow for endogenous growth, i.e. true, long-run growth effects.[1]

The second model, QUEST II, is a multi-country dynamic macro model of EU 15 and the rest of the world. The model embodies many desirable features (such as forward-looking behaviour by households and firms), but it does not explicitly incorporate SMP barriers nor does it allow for endogenous growth.[2]

Each of the two models is run twice. The first run creates a 'baseline' which attempts to replicate the 'monde', i.e. the actual evolution of the European economy post-1987, the initial year of implementation of the SMP. The baseline is a 'dynamic calibration' of the (CGE or macro) model to the monde. The second run simulates a counterfactual scenario, the '*anti-monde*', that keeps the values of the exogenous variables at their observed levels as in the baseline, but modifies some of the parameters so as to eliminate the impact of the SMP measures. The effect of the SMP is obtained by comparing the values of the relevant variables (such as GDP) for the baseline monde and the counterfactual *anti-monde*.

In view of the previous discussion, it is clear that the modification of the parameters needed to produce the '*anti-monde*' (i.e. the situation without the SMP) differs somewhat between the two models. Only GEM-E3-IM allows for a modification of SMP barriers. On the other hand, both models incorporate a parameter describing the degree of competition and another one related to technical progress, both of which require modification in the *anti-monde*.

In principle, the extent to which the relevant parameters ought to be modified in the counterfactual scenario ought to be dictated by the content of Chapters 1 (which deals with SMP barriers), 5 (dealing with competition) and 6 (dealing with growth). If this were the case, the comparison between the monde and the *anti-monde* would provide a truly *ex post* estimate of the SMP. In reality, as already indicated, much of the information contained in these chapters is of a qualitative nature. Consequently, we have quantitative estimates only for some of the parameters, the others necessitating 'informed guesses' as in an *ex ante* exercise. The upshot is a hybrid anti-monde, part *ex ante* and part *ex post*.

Given the structure of the model, the *anti-monde* produced by GEM-E3-IM is based on three sets of parameter change. It is assumed that in the absence of the SMP: (1) all SMP barriers would be reintroduced, thus raising trade costs; (2) the degree of competition (reflected in the degree of market integration) would be reduced, implying a reduction in the elasticity of substitution between EU and domestic products from a range of 3 to 6 to a range of 1.5 to 2; and (3) TFP growth would be permanently reduced by one-tenth of a percentage point, a guestimate based on the results of Chapter 6.

Similarly, given the structure of the model, the *anti-monde* simulation with QUEST II is based on two sets of parameter change. In the absence of the SMP: (1) the degree of competition would be reduced, as reflected by a permanent increase in mark-ups (the increase reaching half of a percentage point after five years, an estimate provided in Chapters 5) and (2) TFP growth would be permanently reduced by one-tenth of a percentage point.

6.3. Results

The two models are simulated so as to estimate the *ex-post* (remember that this is really a hybrid of *ex post* and *ex ante*) impact of the SMP. Both models produce estimates for the impact on GDP and employment. The focus is entirely on aggregate results for the EU as a whole.

Income

Based on the assumptions detailed at the end of the previous section, GEM-E3-IM estimates that the level of EU GDP in 1994 was 1.1% above the level that would have prevailed in the absence of the SMP. The similar estimate based on Quest II is 1.5%. Given that, in 1994, the level of GDP for EU-12 was around ECU 5 500 billion, these estimates imply that the SMP

[1] See Capros et al. (1996).
[2] See Annex 1

produced, in 1994, a gain of GDP in the range of ECU 60 billion to ECU 80 billion. It is as if an income the size of Portugal's (with a GDP of ECU 75 billion in 1994) had been added to the Union.

Where do the gains come from? The two main components are the increase in competition/efficiency and the rise in total factor productivity, each accounting for about half of the total effect. The elimination of trade barriers reduces the degree of segmentation of national markets, thereby increasing the degree of competition, which leads firms to increase their level of output. The result is also a decrease in costs and in prices, with a decrease in price-cost margins. This is the allocation or efficiency gain which puts the economy on a higher trajectory, albeit at the same growth rate as in the absence of the SMP. On the other hand, the rise in TFP, associated with a decline of X-inefficiency prompted by greater competition, induces a higher growth rate of GDP (the increment being of 0.1%).

In GEM-E3-IM, the competition/efficiency and TFP effects lead to a gradual increase in investment and in intra-EU trade, reaching, in 1994 a surplus of, respectively, 2.7 and 4% over the *anti-monde* levels. The result is a gradual rise in the GDP effect, from 0.6% in 1988 to 1.1% in 1994 over and above the no-SMP levels. QUEST II produces a substantially different time profile. Here investment jumps, in 1988 (which is taken as the first year of the SMP implementation), by nearly 6.5% over the *anti-monde* level as economic agents anticipate the benefits of the SMP. This leads, in 1988, to a GDP effect of nearly 2% over the no-SMP level. This sharp rise in investment is followed by a fall below the *anti-monde* levels during the period 1990-92 as agents adjust their behaviour. However, GDP continues to be about 1% above *anti-monde* levels. The initial boom in investment and GDP produced by QUEST II fits well with the patterns observed in the late 1980s for the EU.

Employment

According to Baldwin and Venables (1994), the impact of the SMP on unemployment is bound to be very slight. Their argument is that unemployment is, by definition, a failure of labour supply to match labour demand, a phenomenon which is little affected by the SMP. The logical conclusion of their argument is that the *ex-post* evaluation of the SMP should ignore the employment/unemployment dimension.

Despite this advice, both GEM-E3-IM and QUEST II compute the impact of the SMP on employment/unemployment. GEM-E3-IM estimates that the EU employment level in 1994 was about 300 000 units above the level that would have prevailed in the absence of the SMP. The similar estimate based on QUEST II is 0.7% or 900 000 additional jobs. The divergence between the two models relates to their assumptions on the functioning of the labour market. GEM-E3-IM does not allow for open unemployment. In this model, the SMP has two effects on employment: a positive one, due to increased activity, and a negative one, associated with increased productivity. The net effect is positive, but only marginally so. By contrast, QUEST II allows for open unemployment. Here the state of the labour market is determined by a process of bargaining between workers and employers. In this model, the SMP increases the level of employment (and lowers unemployment) due to an increase in activity and a lowering of mark-ups. This finding is consistent with the result of Chapter 5, which indicates that the SMP has positively contributed to employment by lowering inflation.

Further analysis of the impact of the SMP on employment was undertaken with the help of E3ME, a multi-region, multi-sectoral econometric input-output model of EU 12.[1] The model includes intra- and extra-EU trade equations which have been re-estimated to account for the SMP. The *anti-monde* simulation produced by E3ME is based on trade equations reflecting the absence of the SMP. The model estimates that the level of employment in 1993 was 0.4% above the level that would have prevailed in the absence of the SMP, which translates into 600 000 additional jobs. This result confirms the order of magnitude provided by GEM-E3-IM and QUEST II, indicating a modest impact of the SMP on EU employment.

In conclusion, the impact of the SMP on income and employment is far from negligible. There is little doubt that the effects will continue to grow as the SMP is further implemented and economic agents adjust to the new competitive environment of the European economy.

[1] See *Cambridge Econometrics* (1996).

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Annex 1: Description of the QUEST II model

Introduction

We begin with a brief description of QUEST II, the macroeconometric model of the European Commission's Directorate-General for Economic and Financial Affairs (DG II). The new QUEST model can be characterized as a modern version of the neoclassical-Keynesian synthesis. The behavioral equations in the model are based on microeconomic principles of intertemporal optimizing behaviour of households and firms and the supply side of the economy is modeled explicitly via a neoclassical production function. This feature of the model assures that its long-run behaviour resembles closely the standard neoclassical growth model. The steady state growth rate is essentially determined by the rate of (exogenous) technical progress and the growth rate of the population. Also the real rate of interest in the long run is determined by private savings behaviour, especially by the discount rate of private households. Similarly, the real exchange rate equilibrates the current account in the long run, i.e. it moves in such a way as to make the net foreign asset position of the country sustainable. In this type of model economic policy will not be able to change the long-run growth rate, unless it is able to affect the rate of time preference, the rate of technical progress or the growth rate of the population. It can, however, affect the long-run level of output and thereby the growth rate of the economy over extended periods of time until the new (steady state) income level is reached.

There are two major departures from the neoclassical model in the long run, however. Because firms are not perfectly competitive but can charge mark-ups over marginal cost, the long-run level of economic activity will be lower than that predicted from a model with perfect competition. Also, the model economy will not reach a steady state equilibrium with full employment, since we use a bargaining framework to describe the interaction between firms and workers. As will be described below, labour market rigidities, and therefore involuntary unemployment, will persist even in the long run. The short-run behaviour of the model will be influenced by standard Keynesian features since the model allows for imperfectly flexible wages and prices, as well as adjustment costs for labour and investment.

For the purpose of evaluating the SMP, two different types of shocks were given to the model. In order to capture efficiency gains, it was assumed that total factor productivity growth would be permanently reduced by one-tenth of a percentage point. This was technically implemented by changing the variable T in the production function (see equation (2)) which captures TFP in the model. A second effect is change in the degree of competition, introduced in the following way. The model assumes that firms behave in a monopolistic competition environment and charge a mark-up over marginal cost when setting prices. This mark-up is represented by the Lerner index n in the model. For the simulations it was assumed that in the absence of the SMP, mark-ups would be permanently increased by half a percentage point after five years. The mark-up has two types of effects. First, a higher mark-up reduces demand for both capital and labour because firms take into account that an increase in production can only be sold at a lower price. Thus an increase n represents a downward shift in both the labour demand and the investment equation, as can be seen from equations (6), (7) and (9) below. There is also an additional labour market effect associated with monopolistic competition. In QUEST II it is assumed that wages are set in a bargaining framework between a trade union and firms and that trade unions are able to extract a fraction of the monopoly rent from the corporate sector. Thus an increase of mark-ups will have a positive effect on wage claims. As shown in the wage equation (10), an increase of n leads to a stronger indexation of wages to productivity.

The following sections will give a more detailed description of the economic hypotheses underlying the model. Here we only describe the behaviour of the private sector. The government is introduced via a conventional government budget constraint. No specific behavioural assumptions are made, except for a debt rule which is required to make the evolution of the debt sustainable. The debt rule adjusts indirect taxes of the household sector in order to stabilize the debt to GDP ratio along a baseline path.

Consumption and saving

It is assumed that there are two types of households, namely those following a life cycle consumption pattern where consumption is based on financial wealth (FW) and life cycle income (LCI), and liquidity constrained households which base their consumption decision on disposable income (YDIS). The parameter lc determines the fraction of liquidity constrained households

$$C_t = (1\text{-}lc)\,(\rho+p)\,[LCI_t+FW_t]/PC_t + lc\ YDIS_t \qquad (1)$$

The life cycle component of consumption can generate important savings responses in the context of expected changes in income. If, for example, households expect an increase in their future net income because of better employment opportunities the current savings rate is likely to fall, i.e. consumption may already increase in the present period in anticipation of higher future income.

Firm behaviour

Firms operate in a monopolistically competitive environment. Private sector GDP (Y) is produced via a nested CES and Cobb

Douglas production function F(.) with capital K, energy E and private sector employment N as inputs. The variable TKt represents an efficiency index for the fixed capital stock and the variable Tt represents technical progress. The following equation describes potential output of the corporate sector under the assumption that all factors of production are fully utilized.

$$YPOT_t = ([aK_t^{-\rho}+(1-a)E_t^{-\rho}]^{-1/\rho}T_{Kt})^{(1-\alpha)}N_t^{\alpha}T_t \qquad (2)$$

Technical progress grows with an exogenous rate. The efficiency index captures embodiment effects resulting from current and past investment. More specifically, T_{Kt} is modelled as a function of the mean age of capital. Because prices adjust sluggishly, firms do not always operate at full or optimal capacity, therefore actual output can differ from potential output and we define

$$Y_t = UC_t\, YPOT_t \qquad (3)$$

where UC_t is the rate of capacity utilization. Capital stock (K) changes according to the rate of fixed capital formation J_t and the rate of geometric depreciation δ

$$K = J_t - \delta K_t. \qquad (4)$$

Furthermore, it is assumed that the investment process is subject to rising marginal installation costs. Total real investment expenditures are equal to investment purchases J_t plus the costs of installation. The unit installation costs are assumed to be a linear function of the investment to capital ratio. Total investment expenditures I_t are therefore given by

$$I_t = PI_t J_t (1 + (\phi/2)(J_t/K_t)). \qquad (5)$$

The objective of the firm is to maximize the present value of its cash flow. The optimization problem yields the following investment rule

$$I_t = \phi(q_t / (PI_t/P_t) - 1)K_t \qquad (6)$$

where q is the shadow price of capital and PI/P denotes the relative price of investment goods relative to the GDP deflator. The variable q can be interpreted as reflecting the present discounted value of the marginal revenue from current investment. This can also be written as a function of current and discounted future expected profitability, where profitability is expressed as the ratio between gross operating surplus (GOS) and the capital stock. Profitability is adjusted for monopoly rents.

$$q_t = \int_t^{\infty} [(1-tc)((1-\eta)\,GOS/K)] \exp(-\int_t^s (r+\delta)dj)\, ds. \qquad (7)$$

As can be seen from this expression, the shadow price of capital is a complex expression and depends in particular on current and future real interest rates, profitability and effective corporate tax rates, but also on the mark-up level charged by the firm.

Domestic prices

It is assumed that firms set prices sluggishly and they especially respond to changes in the level of capacity utilization in the following form.

$$\log(P_t) = padj*\log(UC_t/UC^*) + \Sigma\pi_i \log(P_{t-i}) \qquad \text{with } \Sigma\pi_i = 1. \quad (8)$$

Notice, this rule together with the labour demand equation implies that prices are effectively set as a variable mark-up over unit labour costs and the mark-up depends on the degree of capacity utilization.

Employment

Labour is also a quasi fixed factor of production since it takes time for firms to reduce employment or fill existing vacancies. Therefore a distinction between short- and long-run labour demand elasticities must be made. Labour demand per employee is a positive function of output and is negatively related to total real wage costs. These include — on top of the gross wage rate per employee and social security contributions of employers (scc) — a premium which depends on search and vacancy costs of the firm vc_t. In addition, it is negatively affected by the mark-up the firm charges in product markets.

$$N_t = [(1-\eta)\alpha Y_t/(w_t(1+scc) + (r_t+s)vc_t)]^{(1-nl)}\,(N_{t-1})^{nl} \qquad (9)$$

Wages

A bargaining framework underlies our specification of the labour market. If workers and firms can agree on a particular job match, then they will both benefit relative to the alternative state of being unemployed (in the case of workers) and only receiving a reservation wage or having an unfilled vacancy (in the case of firms). The central idea of the bargaining model is that both workers and firms will share these individual profits between them, depending on their relative bargaining strength.

As an outcome of the bargaining solution, a wage rule for total wage costs per employee (wc) of the following form can be derived

$$wc_t = (1-\beta)(z_t + l_t)/(1-tl) + \beta\{(\alpha+\eta(1-\alpha))Y_t/N_t + vc_t prob(.)/q(.)\}. \quad (10)$$

The parameter β ($0 \leq \beta \leq 1$) is the bargaining strength of workers which determines the fraction of total profits from a successful job match going to workers, z are unemployment benefits and l is the imputed value of leisure and tl is the labour tax rate. The term prob(.) denotes the probability of switching into employment (which depends on labour market tightness proxied by the unemployment rate), q(.) gives the probability that a position becomes vacant because a worker quits the job and vc is the average cost of a vacant position. Gross wages are positively indexed to labour productivity. The degree of indexation depends on the bargaining power of workers. More precisely, in the case of perfect competition in the goods market and some market power of trade unions, wages are partially linked to the marginal product of labour, while in the case of imperfect competition and positive β, there exists some rent sharing between workers and firms which is represented by the term $\eta(1-\alpha)$ in the wage equation. Wages also depend on the reservation wage which is composed of unemployment benefits and the value of leisure, which can be expressed as a function of household wealth and the average hours of work supplied per period. Provided workers have market power they can ask for real wages which exceed the reservation wage. Real wages also depend negatively on the unemployment rate, since a high unemployment rate has an adverse effect on the probability of finding a job. The wage equation here is stated entirely in real terms. In the model we also allow for some nominal rigidity by assuming that wage contracts have a duration of one year.

Trade, current account and exchange rates

The model is closed with respect to international trade. The model distinguishes 26 countries/regions altogether. Among these, the EU member countries individually as well as the US and Japan are modelled as described above. The rest of the world is divided into 10 different zones, represented by small trade feedback models. It is assumed that each country/region produces a product which is an imperfect substitute for the products of other regions. This allows us to formulate import equations of the following form for each individual country

$$IM_t = IMS_t * ((PC_t/PM_t)^{\sigma m} (C_t+G_t+I_t). \quad (11)$$

Imports are a function of total domestic demand defined as private and public consumption and total investment and relative prices expressed as the ratio between the domestic consumption and the import price deflator. The coefficient σm is the price elasticity. To capture possible lagged adjustment of imports to price changes the relative price variable appears as a distributed lag. The income elasticity is restricted to one, i.e. we attribute all trend changes in the import share (IMS) to structural developments such as increased trade integration between countries and regions. Consistent with our specification of imports, we define exports of each region as

$$EX_t = c (WPXS_t / (PX_t/E_t))^{\sigma x} WDEM_t \quad (12)$$

where PX is the export deflator, WPXS a competitor's price index (in dollars) and WDEM is an indicator of world demand. Also for exports we allow that they respond sluggishly to changes in relative prices, thus there will be a difference between short- and long-run price elasticities. The coefficient of the world demand variable is constraint to one. Net foreign assets (F) evolve according to the following identity

$$F_t = (1+r_t)F_{t-1} + EX_t PX_t/P_t - IM_t * PM_t/P_t + FTR_t \quad (13)$$

where the term FTR denotes net foreign transfers received. It is assumed in the model that exchange rates will eventually move in such a way as to stabilize the net foreign asset position of the country. The movement of exchange rates is further determined by the assumption of perfect capital mobility, thus (uncovered) interest arbitrage holds.

$$i^j_t = i^{us}_t + \Delta E^j_{t+1}/E^j_t + RPREM^j_t. \quad (14)$$

The second term on the right hand side denotes the expected depreciation of country j's currency *vis-à-vis* the US dollar. The risk premium (RPREM) is currently not modelled endogenously.

Chapter 7 — Growth and real convergence effects

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Growth and real convergence effects

7.1. Introduction

The purpose of this chapter is to examine what, if any, has been the impact of the SMP on growth and real convergence in the EU. It is divided into three parts. Section 2 sets out the stylized facts about growth and convergence in the EU. Section 3 presents conceptual considerations for analysing the potential impact of the SMP on growth and convergence. Finally, Section 4 attempts to evaluate the actual impact observed during the period 1987-93.

7.2. Stylized facts

- Growth. During the period 1975-87, GDP growth in EU 12 was 2.1% p.a., well below the performance of the US at 2.6% p.a. and of Japan at 3.9% p.a.. During the period 1987-95, growth in EU 12 was 2.2% p.a., almost as well as the performance of the US at 2.3% p.a. and of Japan at 2.5% p.a. (see Table 1).

- Investment. During the period 1975-87, investment in EU 12 was on average 20.71% of GDP, slightly ahead of the US at 19.3% and well below Japan at 29.7%. During the period 1987-95, investment fell by one percentage point to 19.6%, well above the US at 16.8% but below Japan at 30.3% (see Table 2).

- Real convergence. Measured as the standard deviation of (the logarithm of) per capita GDP (in purchasing power standards), real convergence among Member States of EU 12 did not progress during the period 1975-86. However, it improved substantially after 1986. Convergence among regions of EU 12 has also improved, but less substantially (see Table 3 and Graph 1).

Table 1

Gross domestic product at 1990 market prices

(Annual percentage change)

Year	B	DK	WD	EL	E	F	IRL	I	L	NL	P	UK	EUR 12
1975	–1.5	–0.7	–1.3	6.1	0.5	–0.3	5.7	–2.7	–6.6	–0.1	–4.3	–0.1	–0.8
1976	5.6	6.5	5.3	6.4	3.3	4.2	1.3	6.6	2.5	5.1	6.9	2.2	4.6
1977	0.5	1.6	2.8	3.4	2.8	3.2	8.1	3.4	1.6	2.3	5.5	2.2	2.8
1978	2.7	1.5	3	6.7	1.5	3.4	7.1	3.7	4.1	2.4	2.8	3.6	3.2
1979	2.1	3.5	4.2	3.7	0	3.2	3.1	6	2.3	2.2	5.6	2.8	3.5
1980	4.3	–0.4	1	1.8	1.3	1.6	3.1	4.2	0.8	1.2	4.6	–1.6	1.4
1981	–1	–0.9	0.1	0.1	–0.2	1.2	3.3	0.6	–0.6	–0.5	1.6	–1.3	0.1
1982	1.5	3	–0.9	0.4	1.6	2.5	2.3	0.2	1.1	–1.2	2.1	1.5	0.8
1983	0.5	2.5	1.8	0.4	2.2	0.7	–0.2	1	3	1.7	–0.2	3.6	1.6
1984	2.2	4.4	2.8	2.8	1.5	1.3	4.3	2.7	6.2	3.3	–1.9	2.5	2.3
1985	0.8	4.3	2	3.1	2.6	1.9	3.1	2.6	2.9	3.1	2.8	3.5	2.5
1986	1.4	3.6	2.3	1.6	3.2	2.5	0.3	2.9	4.8	2.8	4.1	4.4	2.9
1987	2	0.3	1.5	–0.5	5.6	2.3	4.7	3.1	2.9	1.4	5.5	4.8	2.9
1988	4.9	1.2	3.7	4.5	5.2	4.5	4.3	4.1	5.7	2.6	5.8	5	4.3
1989	3.4	0.6	3.6	3.8	4.7	4.3	6.1	2.9	6.7	4.7	5.7	2.2	3.5
1990	3.4	1.4	5.7	0	3.7	2.5	7.8	2.1	3.2	4.1	4.3	0.4	3
1991	2.2	1.3	5	3.1	2.3	0.8	2.2	1.1	3.1	2.3	2.1	–2	1.7
1992	1.8	0.2	1.8	0.4	0.7	1.3	3.9	0.6	1.9	2	1.1	–0.5	1
1993	–1.6	1.5	–1.8	–1	–1.2	–1.5	3.1	–1.2	0	0.2	–1.2	2.2	–0.7
1994	2.2	4.4	2.4	1.5	2.1	2.7	6.7	2.1	3.3	2.7	1	3.8	2.6
1995	1.9	2.6	1.9	2	3	2.2	8.6	3	3.2	2.4	2.5	2.4	2.4

Source: DG II

Table 2

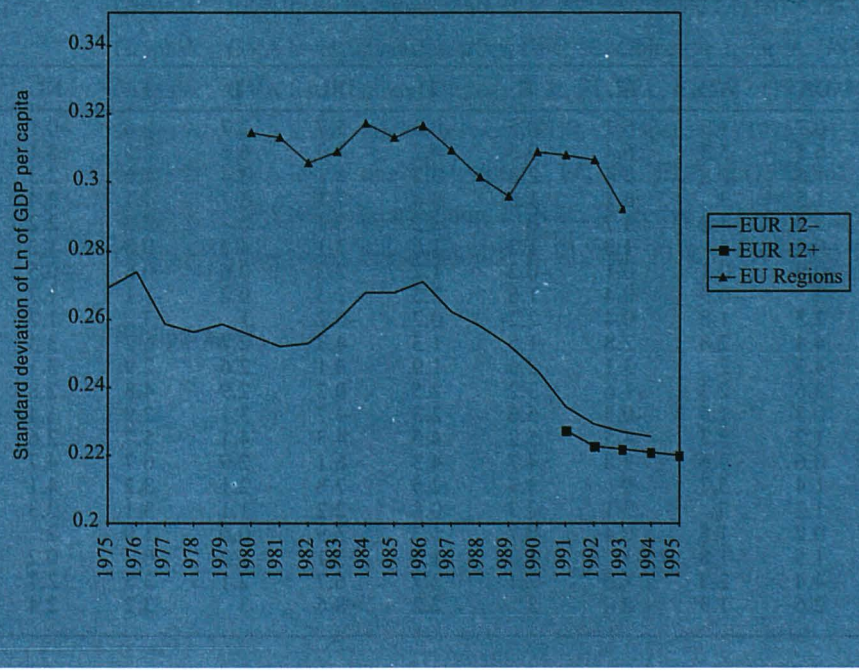
Gross fixed capital formation at current prices — total economy

(Percentage of gross domestic product at market prices)

Year	B	DK	WD	EL	E	F	IRL	I	L	NL	P	UK	EUR 12
1975	22.5	21.1	20.4	25.6	26.4	24.1	22.4	25	25.1	21.6	28.6	19.9	22.5
1976	22.1	23.0	20.1	26.1	24.9	23.9	23.9	23.9	22.6	19.9	27.6	19.6	22.1
1977	21.6	22.1	20.3	28.3	23.9	22.9	23.8	23.5	22.7	21.6	29.2	18.6	21.7
1978	21.7	21.7	20.6	29.5	22.6	22.4	26.5	22.8	21.8	21.8	30.8	18.5	21.5
1979	20.7	20.9	21.7	31.8	21.5	22.4	29.5	22.9	22.1	21.4	29.3	18.7	21.7
1980	21.1	18.8	22.6	29.8	22.2	23.0	27.9	24.3	24.6	21.4	31.5	18.0	22.1
1981	18.0	15.6	21.6	27.4	21.9	22.1	28.3	23.9	23.0	19.6	34.0	16.2	21.0
1982	17.3	16.1	20.4	24.6	21.6	21.4	25.3	22.4	22.7	18.6	34.3	16.1	20.2
1983	16.2	16.0	20.4	25.0	20.8	20.2	22.1	21.3	19.3	18.6	32.2	16.0	19.6
1984	16.0	17.2	20.0	22.8	18.7	19.3	20.5	21.1	18.2	19.1	26.0	17.0	19.3
1985	15.6	18.7	19.5	23.5	19.2	19.3	18.2	20.7	16.0	19.7	24.0	17.0	19.2
1986	15.7	20.8	19.4	22.7	19.5	19.3	17.5	19.8	19.6	20.4	24.4	17.0	19.1
1987	16.0	19.7	19.4	21.1	20.8	19.8	16.4	19.8	22.3	20.8	27.0	17.8	19.4
1988	17.7	18.1	19.6	21.4	22.6	20.7	15.7	20.1	24.3	21.3	28.2	19.5	20.2
1989	19.1	18.1	20.2	22.5	24.1	21.3	16.9	20.2	23.1	21.5	27.5	20.5	20.8
1990	20.3	17.4	20.9	23.0	24.5	21.4	18.0	20.3	24.1	20.9	27.3	19.6	21.0
1991	19.5	16.5	21.3	22.5	23.8	21.2	16.6	19.8	25.9	20.4	26.7	17.0	20.4
1992	19.1	15.6	20.7	21.6	21.9	20.0	15.6	19.2	23.4	20.0	26.7	15.7	19.5
1993	17.8	15.0	18.9	20.7	19.9	18.6	14.9	16.9	24.0	19.3	25.1	15.1	18.0
1994	17.4	14.8	18.5	19.9	19.8	18.1	15.1	16.6	21.3	19.3	25.5	15.0	17.7
1995	17.5	16.1	21.7	20.2	20.8	18.1	16.2	17.0	21.5	19.6	25.4	15.0	18.9

Source: DG II

GRAPH 1: **Convergence among EU countries and regions (1975-95)**



Source: Commission services.

Table 3

Gross domestic product at current market prices per head of population

(PPS: EUR 12 = 100)

Year	B	DK	WD	EL	E	F	IRL	I	L	NL	A	P	SF	S	UK	EUR 12–
1975	105.6	108.2	114.1	63.3	78.2	112.9	62.4	95.5	144.3	110	103.4	52.7	97.8	121.4	101.8	100
1976	106.8	110.3	115.9	63.7	76.6	112.5	59.7	97.1	143.8	110.1	103.9	52.6	93.2	117.3	99.9	100
1977	104.6	109	116.5	63.3	76	112.8	62.2	97.6	134	109.3	106	53.5	90.9	112.3	99.7	100
1978	104.4	107.3	116.9	64.9	74.2	112.9	63.9	98.1	136.7	108.1	103.2	53	90	110.8	100.4	100
1979	103.3	107.4	118.1	64.4	71.3	112.5	62.9	100.5	135.1	106.4	105	53.7	93.1	111.3	99.9	100
1980	106.6	105.7	117.6	64.3	71	112.6	63.5	103.6	134.7	105.8	107	55	96.7	111.8	97.2	100
1981	105.8	105.1	117.9	63.9	70.4	113.6	65	104.3	133.4	104.8	106.8	55.6	98.4	112	96.1	100
1982	106.7	107.8	116.2	63.4	70.7	115.2	65.4	103.5	135.7	102.6	107.2	56.3	100.5	112.4	97.2	100
1983	105.7	109	117	62.4	70.9	113.8	63.9	102.6	135.5	102.5	108.1	55.3	101.2	112.7	99.1	100
1984	105.7	111.5	118.3	62.5	70.2	112.4	64.8	103	137.9	103.2	107.3	53.1	101.5	114.8	99.2	100
1985	104.1	113.7	118.3	62.7	70.2	111.4	65.1	103	139.7	103.6	107.4	53.3	102.2	114.2	100.1	100
1986	102.7	114.6	117.8	61.9	70.3	110.7	63.6	103.1	144.2	103.1	105.7	54.1	101.5	113.5	101.5	100
1987	101.9	111.8	116.4	59.9	72.2	109.7	64.7	103.4	140.1	101.2	104.5	55.6	102.6	113.6	103.3	100
1988	102.7	108.7	115.5	60.1	72.9	109.8	65.2	103.4	143.5	99.2	104.4	56.7	103.3	111.3	104.1	100
1989	102.8	106.1	115	60.3	73.9	110.4	67.6	103.1	147.9	100.2	104.8	58.2	105.5	109.8	102.8	100
1990	103.5	104.9	116.4	58.6	74.8	110	71.2	103.1	145.3	101.2	105.4	59.4	102.6	107.5	100.4	100
1991	103.8	105.6	119.1	59.6	77.2	110.1	72.6	103.8	148.1	99.5	104.9	62.3	91.1	101.6	94.3	100
1992	106.8	103.3	119.9	60.8	75.4	108.7	75.6	103.4	150	99.7	106.1	64.5	85	96.7	95.2	100
1993	110.6	109.8	118.2	63.2	76.3	107	78.6	101.4	160.1	101.5	110.4	67.8	89.6	96.3	97	100
1994	110.7	112.1	119.4	63.6	74.5	105.3	83.4	102.3	159.9	101.9	111.5	68.4	89.1	95.7	96.8	100
																EU 12+
1991	106.9	108.8	105.9	61.4	79.5	113.4	74.8	106.9	152.5	102.5	108	64.1	93.8	104.7	97.1	100
1992	109.5	105.9	108.1	62.3	77.2	111.4	77.5	106	153.8	102.2	108.7	66.1	87.1	99.1	97.5	100
1993	112.9	112.1	108	64.6	77.9	109.3	80.3	103.5	163.5	103.7	112.7	69.2	91.5	98.3	99	100
1994	112.7	114.2	109.9	64.7	75.9	107.2	85	104.2	162.9	103.8	113.6	69.6	90.8	97.5	98.6	100
1995	112	114.2	109.4	64.3	76.3	106.8	90	104.8	165.4	103.6	112.7	69.8	92.4	97.4	98.6	100

Source: DG II

7.3. Growth and real convergence: conceptual considerations

From an economic point of view, European integration consists in the gradual elimination of barriers to flows of goods, services, productive factors and information or technology among various national economies. Such a reduction of the institutional obstacles to economic activity will translate into a reallocation of factors within the EU and a change in the pattern of specialization of its various member economies producing static efficiency gains. These benefits of integration are typically rather small under the traditional neoclassical assumptions of perfect competition and constant returns to scale. Recent works have extended the analysis to take account of the influence of non-competitive market structures and economies of scale. In these models, integration can have an additional effect on aggregate output by allowing the size of productive units to come closer to the optimum. Moreover, the increase in competitive pressure could also lead to an increase in the expected benefits of integration.

On the other hand, there has always been some notion that the long-run impact of the internal market on growth could be rather more substantial than suggested by studies focusing on static effects. In particular, there are reasons to expect that the static effects will have a further positive effect on growth through induced changes in saving and investment behaviour leading to increased factor accumulation and faster technical progress. In recent years, the development of endogenous growth models has permitted to give a rigorous theoretical base to this possibility and, thereby, to try to quantify the growth effects of 1992.

7.3.1. Growth and real convergence: Theory[1]

The theoretical literature provides a large variety of plausible models with contrasting implications for the evolution of income levels and their distribution in a group of countries. An

[1] This section is based on Cambridge Econometrics (1996) and de la Fuente (1995).

important part of the growth literature focuses on two questions: the feasibility of sustained growth in income per capita, and the perspectives for income convergence across countries. The predictions of theoretical models concerning these two questions depend crucially on two technological assumptions: the existence, or not, of increasing returns to reproducible factors, including the stock of technical knowledge or 'technological capital', and the degree to which useful knowledge is a public good across countries.

Following Solow (1956), traditional neoclassical models, based on the assumptions of decreasing returns to capital and free access by all countries to a common stationary technology, predict that growth cannot be sustained permanently but have optimistic implications from the point of view of convergence. In the absence of technical progress, decreasing returns imply that the marginal product of capital will fall with the accumulated stock, reducing both the incentive to save and the contribution of a given volume of investment to output growth. As a result, growth will gradually slow down and, under standard assumptions, will eventually stop. The same logic explains the convergence prediction: poorer countries will have a greater incentive to save and a higher rate of growth for a given rate of investment. Hence, they will gradually reduce the distance which separates them from richer countries. Moreover, this result will be reinforced by open-economy considerations, as factor flows and trade will both contribute to factor price equalization.

The introduction of exogenous technical progress in this framework allows for sustained growth but does not modify the convergence result, under the assumption that technology is a pure public good in the sense that all countries have access to the same stock of useful knowledge. In fact, for the convergence prediction to survive, it is enough to assume that this is true in the long run.

These considerations have traditionally served to justify a certain optimism regarding the long-run perspectives of the less-developed countries. Even a quick look at the data, however, shows that the evolution of the world income distribution has not confirmed such expectations. This fact, together with the historically upward trend of average growth rates, has been one of the factors which have inspired the search for alternatives to the traditional neoclassical model, giving rise in recent years to the endogenous growth literature. The new literature has explored the implications of increasing returns and the determinants of the rate of technical progress, reaching in some cases predictions which are very different from those of the traditional models. Endogenous growth models seek to endogenize the sustained accumulation of factors, among which they also include human capital and knowledge capital. In particular, they focus attention on the micro-foundations of the accumulation process, that is, on the private and social costs and benefits of investing in physical capital, skill (human capital) or technological progress (knowledge capital).

Although the details differ among models, the key requirement is that if the investment rate is to remain constant in the long-run, then the return to investment faced by self-interested investors has to be non-diminishing in the capital stock. The different strands of endogenous growth theory fall into two groups: the first, initiated by Lucas (1988), stressing the importance of the accumulation of human capital, and the second, initiated by Romer (1986), emphasizing the importance of sustained innovation. Both strands are characterized by some form of spillover. In the Lucas-type models, based on human capital, the individual's private effort to improve their own skills will also improve productivity of other workers and of physical capital. Similarly, in the Romer-type models, a firm's private effort to innovate to exploit temporary monopolistic rent will also increase the public stock of knowledge. The existence of these externalizes imply that the market allocation of resources may not be optimal, opening up the possibility of a justification for policy intervention.

The existence of aggregate scale economies can invert the neoclassical predictions of a falling growth rate and convergence across countries. With increasing returns in reproducible factors the return on investment is an increasing function of the accumulated stock. As a result, in Romer-type models, the growth rate will increase in time and with the level of income. Similarly, positive growth rates may be sustained indefinitely in Lucas-type models where the rate of technical progress is determined endogenously and reflects private investment decisions in human or technological capital, provided such activities are not subject to diminishing returns due, for example, to the existence of learning effects. In these models, moreover, permanent differences in growth rates may arise as a result of differences across countries in economic policies, market size, or factor endowments.

The preceding discussion has identified several factors of interest from the point of view of the convergence or divergence of per capita income levels across countries. The endogeneity of technical progress and the possibility of increasing returns may explain the apparent lack of a tendency for the growth rate to fall over time, as predicted by neo-classical models, but they also suggest reasons why one might not expect convergence. In fact, these two factors may generate a tendency for initial advantages to increase over time, rather than decrease, giving rise to a process of increasing polarization consistent not only with the long-run persistence of large income differences across countries, but also with a tendency for such differences to increase. On the other hand, the possible importance of international technological spillovers, and the neoclassical logic of decreasing returns point in the opposite direction.

7.3.2. Application to economic integration

Analysis of the SMP effects on growth can be classified into two categories: static and dynamic effects.

7.3.2.1. Static effects of integration

As already discussed in Chapter 4, the SMP can be expected to result in a more efficient allocation of resources within the EU. This would raise the level of output per capita, but not its long-run growth rate. However, during the transition period from the old (i.e. pre-SMP) to the new (i.e. post-SMP) equilibrium, there is a short-term temporary acceleration of growth.

7.3.2.2. Dynamic effects of integration

Economic integration produces two types of dynamic effects: medium-run and long-run effects.

Medium-run effects

To the extent that static efficiency gains raise income and the rate of return on investment, they have a further effect by stimulating savings and capital formation. This is Baldwin's (1989, 1992a) medium-term 'growth bonus'. The medium-term growth bonus is a multiple of the initial efficiency gain, whose magnitude depends on the savings rate and technological coefficients. Even more than the short-term effect, the medium-term effect will materialize only gradually over time. During the transition period, there is a medium-term temporary acceleration of growth, but the long-run growth rate remains unchanged.

Long-run effects

In the endogenous growth framework, integration can boost long-run growth if it alters the private costs and benefits of investing in new innovations.[1] This research has highlighted several ways in which participation in a larger integrated economy can affect a nation's growth. Firstly, residents in an integrated economy can benefit from a higher level of technical knowledge than those living in relative isolation. Trade can facilitate the process of technological dissemination. Secondly, exposure to international competition may improve the quality of industrial research. A firm developing a product for a protected domestic market need only make use of technologies that are new to the local economy, whereas one that hopes to compete on the international market will be forced to generate ideas that are innovative on a global scale. A third reason suggests that international integration may bolster industrial research by expanding the size of potential customer base.[2]

There is a fourth reason why integration can positively affect the long-run growth rate of the economies involved in the integration programme.[3] The market structure of an economy's research sector is an important determinant of the process. Import competition may stimulate growth by reducing the market power of domestic innovators. Specifically, import competition forces domestic innovators to choose to either quicken their pace of innovation or be displaced by foreign innovators. While some of the domestic innovators may be forced out of the market, the overall rate of innovation, and therefore the growth rate of output, increases. A specific, sectoral point is worth noting here. Even in the simplest growth models the growth rate depends on differences between the inter-temporal preference rate of individuals and the rate of return on investment. With an non-competitive financial sector, the margin between the return earned by investors and the cost of funds to investors tends to be large, either due to inefficiency or monopoly rents. Competition from foreign financial firms can act to reduce this margin, and hence increase the resources devoted to innovation and the output growth rate.

Nevertheless, it is quite possible that the internal market impact might negatively affect the incentives to invest in technological innovations and human capital accumulation and this may be so particularly for the relatively less developed countries. Grossman and Helpman (1991) give four reasons why this might be the case. First, more trade implies more competition and national firms might find that this reduces the anticipated profitability of their investment in knowledge. Second, opening up trade with a technologically advanced country may force the less advanced country to reduce investment in innovation. This might lead to a concentration of technological progress in a few regions that had an advantage in innovation production before economic integration. Third, countries with unskilled (manual) labour endowment may be forced by economic integration to specialize in commodities that are low in technological content. Fourth, countries that invested relatively more in human capital before economic integration will experience a higher reward after economic integration, reducing the incentives to invest in research and development.

7.3.3. Empirical evidence

7.3.3.1 Growth

European integration can affect growth via its impact on three channels: physical capital formation (integration-induced

[1] In this field the path-breaking work is due to Grossman and Helpman (1991), who introduced trade into models with an endogenously determined growth rate. Since then several articles have provided a broad perspective on how on-going economic integration processes can affect the long-run growth rate. These include Rivera-Batiz and Romer (1991), who analysed the effect of integration across similar economies, and Baldwin (1992).

[2] See Rivera-Batiz and Romer (1991).

[3] See Baldwin (1992b).

investment-led growth); human capital formation (integration-induced skills-led growth); or technical progress (integration-induced technology-led growth). European integration can impact upon these three channels either directly through specific Community policies promoting investment and technology, or indirectly by changing the incentives faced by firms.

An *ex ante* estimate of the potential growth effects of the SMP was obtained by Baldwin (1989) using the calibration methodology. Since then, several studies have attempted to estimate econometrically the *ex post* growth effects of European integration. Most studies have focused either on integration-induced investment-led growth or on integration-induced technology-led growth.

Studies on investment-led growth tend to rely on the cross-section methodology introduced by Barro (1991). These studies generally find that lowering domestic trade barriers stimulates the investment-to-GDP ratios in a large sample of countries. However, Baldwin and Seghezza (1996) find no evidence that European integration stimulated investment and growth above and beyond the amount captured by a tariff-cutting measure.

Studies on technology-led growth have adopted two different approaches. On one hand, Henrekson, Torstensson and Torstensson (1996) estimate the growth effect of European integration during the period 1976-85 using Barro's model. The paper finds that the EU and EFTA have each added about one percentage point to Members' average growth rates. On the other hand, Baldwin and Seghezza (1996) extend the cointegration technique of Coe and Helpman (1995) for testing technical spillovers to the effect of European integration on productivity growth. The study produces weak evidence that EU membership has allowed Member States to enjoy a higher level of productivity growth than they would have otherwise. Johansson (1996) also examines technical spillovers for EU Member States, but distinguishes between intra-EU and extra-EU trade flows as in Jacquemin and Sapir (1991). She finds that, over the period 1970-90, intra-EU imports had a significant and positive effect on productivity, while extra-EU imports had no such impact, therefore suggesting that European integration has been particularly beneficial for growth.

The studies reviewed here suggest that European integration has been beneficial for growth in Europe. However, none of the studies tackles specifically the issue of the SMP.

7.3.3.2. Convergence

The impact of economic integration on income and welfare and their distribution across countries and regions is a complex one. Our understanding of the redistribution and reallocation processes which are set in motion by the SMP is incomplete, and the short time period which has elapsed since the start of the programme, together with the inevitable lags in data collection, makes it extremely difficult to establish solid empirical evidence. Moreover, the empirical literature on economic growth and convergence, which did provide some indications as to where and how to look for convergence, has come under mounting criticism. It has been criticised for its lack of theoretical foundations, for not asking the right questions and for not using the available information to its full extent in trying to answer those questions.

The main question on which the empirical literature has focused is whether poor economies tend to grow faster than rich ones. This is clearly a necessary condition for convergence, but it has been recognized in most of the literature that it is not a sufficient condition. Other influences than the starting level of income on its own may prevent economies from converging. In fact, one would want to know by which channels growth is affected and why some economies converge where others do not. This is particularly relevant within the context of the internal market. Economic integration may strengthen the forces which bring about convergence and act as a general catalyst, but in the short to medium term it is more likely that some channels will be opened earlier than others. Depending on the importance of such channels for individual economies, growth may pick up fast in some of the poor economies in the Community whereas others appear to stay poor.

The recent empirical literature on convergence proposes to study the distribution of income over countries and regions and its evolution over time in its entirety, rather than focusing on the typical behaviour in a group of countries or regions found by regression analysis. This alternative approach has not yet resulted in a clear methodology, and it is possible to analyse some of the characteristics of the distribution by taking a closer look at the regression residuals. This has been done to some extent in the Cambridge Econometrics (CE) study of which the results are presented below. Even then, it may be too early to expect clear empirical evidence in terms of overall economic growth. The CE study also analyses the behaviour of different sectors of the economy. Additional insight could come from studies which investigate the impact of the internal market on the channels through which, according to economic theory, convergence is brought about.

7.4. The SMP, EU growth and real convergence

The purpose of this section is to analyse Europe's experience with respect to growth, and then to interpret it within the context of the literature discussed above.

To begin with, an important caveat should be underscored. Within the context of the present exercise, there is a fundamental problem in attempting to evaluate the growth effect of the SMP due to a combination of two issues. On one hand, the period covered by the evaluation is extremely short,

essentially 1987-93. On the other, genuine growth effects are basically long-run effects which are unlikely to have materialized during such short period. The upshot is that, probably, the only growth effects that can be detected by the present evaluation are allocation and medium-term effects, both level effects producing temporary acceleration of growth rather than genuine long-run growth effects.

Section 7.4.1. is essentially descriptive in character, summarizing growth and convergence trends in the EU prior to and since 1987, adopted as representing the first year of possible SMP effects (allowing for some anticipation of the legislative measures). In the section, descriptive statistics (essentially estimates of average growth rates) are calculated and compared for the two periods, to set out the facts that need to be explained.

While it is tempting to interpret any change in these statistics after 1987 as representing the effect of the SMP, there are various problems in doing so. Firstly, the theoretical understanding of what determines growth needs to be made explicit. For example, if these 'growth trends' are taken to represent steady-state rates, which are altered by the exogenous influence of the SMP, it should be recognized that this view of the world is quite different from the conventional neoclassical one, in which actual growth rates decrease as an economy catches up with a richer 'leader'. This is not necessarily a criticism, but it demonstrates that interpretation can only be undertaken within some kind of theoretical framework, explicit or implicit.

Secondly, to attribute the change in growth trends post-1987 to the SMP would clearly be grossly simplistic given all the economic events that have occurred in the period (see Chapter 2). Obviously, the method adopted here, based on Italianer (1994), of controlling for growth trends over the same periods in Japan and the US is not sufficient to account for all these factors.

One method of attempting to adjust for other factors affecting growth is to include them explicitly in an econometric equation, together with a variable to represent the implementation of the SMP. Section 7.4.2. applies the methodology developed by Barro, estimating a variety of econometric equations on cross-section data for average growth rates in per capita output for the periods 1975-86 and 1987-93. Since this method uses average growth rates for a whole period, the representation of the SMP is necessarily crude: 'off' in the first period, and 'on' in the second. Equations are estimated for data at the level of the Member States, and below national level for regions at the NUTS 2 level, at which Member States and German *Länder* are disaggregated in administrated units of the size of the départments in France and the provinces in Belgium and the Netherlands. In the analysis at Member State level, the number of observations is small (12 countries per period). It was therefore decided to pool the data for the two periods and to allow for changes in the coefficients of a selection of variables in the second period. In the analysis at regional level, this problem does not arise, and so separate equations were estimated for the two periods.

Finally, given the criticism made of the Barro methodology on grounds of both econometric and economic theory, an alternative method is also applied to data at the regional level, providing an alternative set of results on evidence for convergence.

7.4.1. Descriptive analysis[1]

7.4.1.1. Aggregate analysis

Using the methodology of Italianer (1994), Table 4 shows the growth rate of per capita gross value added (GVA) in Europe, Japan and the US over two periods, 1975-87 and 1987-93.[2] Average growth over any period depends on the levels for the years selected to mark the start and end of the period, which may be influenced by temporary shocks to the economy and therefore may provide a misleading indication of underlying average annual growth[3] (see Table 4).

In terms of GVA per capita, comparison of columns 1-3 of the table shows that the EU 12 as a whole grew slightly faster in the second subperiod than it did in the first, Japan saw a still smaller improvement and the US saw slower growth post-1987 than before. These differences are quite small, but the remaining columns of the table show that when the change in the average growth rate is compounded over time, there is a non-negligible impact on comparative per capita GVA. In 1993, EU 12 per capita output was 1.1% higher than it would have been if the European economy had grown at the pre-1987 trend rate, while Japanese output was 0.2% higher and US output about 2% lower on the same basis.

Table 5 shows that this impression of a relatively better EU 12 performance is reinforced when the same analysis is carried out for GVA (as opposed to GVA per capita). The EU 12 experienced a higher growth rate in the post-1987 period than earlier, whereas Japan and the US did not. These results, based

[1] This section draws on the results by Cambridge Econometrics (1996).

[2] The year 1983 was adopted as the end-point of the SMP period for the sake of coherence with the rest of the report.

[3] In order to minimize the role of period-end noise, GVA per capita growth has been estimated by fitting the trend growth curve $\log(Y) = a + bt$, in which Y is the variable whose growth rate is being estimated, b is the trend exponential growth rate, and t is time. The same methodology is applied in the sections below.

Table 4

GVA per capita growth rates after 1987 compared with 1975-87 trend

	% pa		pp	Cumulative impact (per cent)						
	1975-87	1987-93	Difference	1987	1988	1989	1990	1991	1992	1993
B	1.59	2.12	0.53	0.32	3.29	4.81	6.17	6.52	6.49	2.90
DK	2.15	0.95	- 1.20	- 1.98	- 3.02	- 4.64	- 5.52	- 6.94	- 8.02	- 8.98
WD	1.90	2.60	0.70	- 0.44	0.76	1.46	4.82	6.85	5.80	1.52
EL	1.37	1.17	- 0.20	- 2.03	0.83	3.20	0.26	0.94	- 0.00	- 2.27
E	0.85	2.40	1.55	4.66	8.72	12.40	14.98	16.18	15.85	13.61
F	1.64	1.42	- 0.22	0.18	2.56	4.66	4.49	3.16	2.18	- 0.93
IRL	1.73	8.60	6.87	3.97	8.46	19.00	23.78	29.88	38.78	48.05
I	2.41	1.50	- 0.91	0.55	2.01	2.38	1.89	0.41	- 1.46	- 4.75
L	2.20	2.59	0.39	- 0.05	3.10	6.43	6.08	6.16	5.02	2.90
NL	0.88	2.00	1.12	- 0.34	0.73	3.90	6.42	7.00	6.63	15.40
P	1.74	3.55	1.81	3.08	4.89	7.96	15.39	15.96	15.00	11.70
UK	1.82	0.38	- 1.44	2.63	5.54	5.59	3.86	- 0.23	- 2.88	- 3.00
North Italy	2.53	1.67	- 0.86	0.44	2.27	2.83	2.40	0.50	- 0.92	- 4.42
South Italy	2.27	1.17	- 1.10	0.90	1.29	1.07	0.31	0.03	- 3.24	- 5.91
Non-objective 1 Spain	1.13	2.36	1.23	4.24	8.28	12.21	14.15	14.88	13.98	11.53
Objective 1 Spain	0.64	2.45	1.81	5.03	9.02	12.34	15.52	17.15	17.34	15.26
EU 12	1.72	1.78	0.06	0.84	2.98	4.31	5.25	4.75	3.59	1.06
EU 6	1.85	1.96	0.11	0.03	1.74	3.04	4.30	4.38	3.29	- 0.14
EU 9	1.84	1.68	- 0.16	0.54	2.47	3.52	4.15	3.42	2.13	- 0.48
1973 entrants	1.83	0.75	- 1.08	2.20	4.78	5.02	3.61	0.15	- 1.88	- 1.67
New entrants	1.00	2.39	1.39	3.34	7.00	10.41	12.90	13.99	13.51	11.1
Objective 1	1.05	2.87	1.82	3.38	7.09	10.96	13.62	15.08	15.32	83.96
Japan	3.15	3.18	0.03	0.44	3.05	4.18	5.49	6.07	3.88	0.19
US	1.53	0.72	- 0.81	0.58	1.99	2.16	0.98	- 2.78	- 2.68	- 2.03

Source(s): CE's E3ME database, based on Eurostat Cronos, OECD
Note: Great care should be applied in interpreting the results in this table as cycles tend to differ across Member States.

on an admittedly simplistic methodology, broadly confirm the findings of Chapter 6 (see Table 5).

Within the EU 12, analysis of the performance of Member States grouped by their date of entry into the EU adds useful insights. In terms of GVA, the EU 6 and EU 9 performed much the same as the EU 12 as a whole, but the 'new entrants', Spain, Portugal and Greece, saw a larger relative improvement, their overall GVA in 1993 being nearly 7% higher than it would have been had pre-1987 growth trends continued. These three countries plus Ireland form the group of the so-called 'cohesion countries'. In this case the picture is even more striking, with an improvement of nearly 9.5% in 1993 relative to an extrapolation of pre-1987 trends. This reflects the rapid growth of the Irish economy since 1987. With an average growth rate of about 8.5% per annum post-1987, compared with 2.7% per annum in the period up to 1987, Ireland's GVA in 1993 was about 40% higher than it would have been if its economy had continued to grow at the pre-1987 rate.

Examining GVA per capita, the comparison of actual and extrapolated levels ceases to be positive for the original EU 6 and EU 9, while the improved performance for the 'new entrants' and cohesion countries is even higher.

Graph 2 shows population trends in the period 1975-93 in Ireland, Greece, and Spain (1975=100). After having experienced higher population growth than the EU 12 average in the early years, growth generally slowed.

Table 5

GVA growth rates after 1987 compared with 1975-87 trend

	% pa		pp	Cumulative impact (%)						
	1975-87	1987-93	Difference	1987	1988	1989	1990	1991	1992	1993
B	1.65	2.43	0.78	0.34	3.59	5.42	7.02	7.63	7.84	4.48
DK	2.23	1.13	–1.10	–1.94	–3.00	–4.66	–5.47	–6.69	–7.60	–8.40
WD	1.82	3.39	1.57	–0.34	1.56	3.37	7.25	10.48	10.35	6.82
EL	2.19	1.71	–0.48	–2.65	–0.4	1.45	–1.76	–0.78	–2.17	–4.90
E	1.57	2.62	1.05	4.07	7.66	10.83	12.88	13.53	12.76	10.09
F	2.10	2.02	–0.08	0.15	2.55	4.70	5.11	3.81	2.90	–0.17
IRL	2.68	8.48	5.80	3.08	6.47	15.33	18.80	24.59	32.35	40.58
I	2.68	1.71	–0.97	0.45	1.84	2.10	1.56	0.08	–1.85	–5.19
L	2.43	3.46	1.03	0.56	3.77	8.00	8.77	9.43	8.84	7.01
NL	1.46	2.70	1.24	–0.28	0.87	4.09	6.74	7.54	7.34	6.23
P	2.67	2.74	0.07	2.58	3.83	6.31	8.02	7.50	5.90	2.2
UK	1.91	0.69	–1.22	2.85	5.92	6.19	4.67	0.78	–1.64	–1.52
North Italy	2.63	1.75	–0.88	0.31	2.04	2.50	2.09	0.24	–1.20	–4.73
South Italy	2.84	1.60	–1.24	0.87	1.23	0.87	–0.08	–0.45	–3.87	–6.65
Non-objective 1 Spain	1.52	2.56	1.04	3.96	7.87	11.57	13.31	13.80	12.79	10.19
Objective 1 Spain	1.62	2.69	1.07	4.2	7.46	10.05	12.44	13.28	12.77	10.03
EU 12	2.02	2.18	0.16	0.77	2.98	4.46	5.40	5.11	4.10	1.68
EU 6	2.07	2.50	0.43	0.04	1.98	3.63	5.23	5.72	4.95	1.78
EU 9	2.05	2.15	0.10	0.57	2.68	4.01	4.92	4.53	3.51	1.13
1973 entrants	1.97	1.02	–0.95	2.34	4.99	5.32	4.04	0.75	–1.13	–0.76
New entrants	1.77	2.48	0.71	2.77	5.93	8.82	9.98	10.58	9.63	6.84
Objective 1	1.83	2.95	1.12	2.79	5.96	9.25	10.57	11.55	11.29	9.44
Japan	3.89	3.54	–0.35	0.22	2.54	3.37	4.30	4.46	1.87	–2.22
US	2.56	1.60	–0.96	0.52	1.90	2.06	0.31	–3.40	–3.39	–2.83

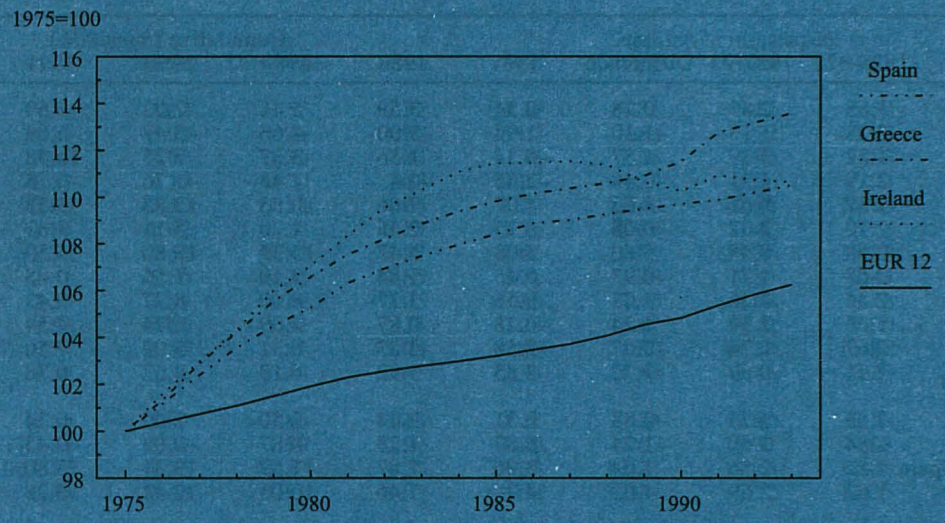
Source(s): CE's E3ME database, based on Eurostat Cronos, OECD
Note: Great care should be applied in interpreting the results in this table as cycles tend to differ across Member States.

It is, of course, difficult to disentangle the effect of the SMP from other effects that could be responsible for these changes. For example, the fast growth of the Irish economy has been driven by foreign investment (notably from the US and Japan) and this reflects active domestic policies to attract foreign investors, not just the attractions of the single market. On the other hand, it is clear that foreign investors located in Ireland supply the European market.

Despite the caveats that must be noted with respect to causality, there is therefore a broad indication that some of the predictions of the simple neoclassical model have been validated, with a faster growth in per capita income in the poorer economies. These mechanisms seem to have been enhanced during the period of the single market.

An examination of investment trends in the EU, Japan and the US, helps to reinforce the point. Graph 3 shows the aggregate investment to output ratio in the EU 12 compared with cohesion countries, the US and Japan. At the EU 12 level, it is evident that the ratio rose in the boom post-1987, and then fell sharply. Comparison with the US experience is of some interest. The EU 12 investment to output ratio is higher in 1975, falls steadily until 1985, when it is equal to the US ratio, and then has risen above the US ratio again. However, the Japan ratio remains well above the EU average. Both the improvement after 1987 and the fall over 1991-93 are much more marked for cohesion countries. Graph 4 shows this indicator for the countries separately, and shows that the largest effect is in Spain and Portugal. In both cases, however, the turning point seems to be 1985, when they joined the EU. On

GRAPH 2: **Population levels**



Source: Cambridge Econometrics (1996).

Table 6

Average investment to output ratio

	1975-1987	1987-1993	Difference
B	18.39	19.69	1.30
DK	19.88	17.88	- 2.00
WD	21.20	20.87	- 0.33
EL	27.72	22.68	- 5.04
E	22.75	26.08	3.33
F	21.38	21.71	0.33
IRL	26.59	19.62	- 6.97
I	23.24	22.85	- 0.39
L	23.18	28.57	5.39
NL	20.58	20.57	- 0.01
P	27.11	31.43	4.32
UK	17.03	18.53	1.50
North Italy	17.61	19.96	2.35
South Italy	40.30	31.57	- 8.73
EU 12	20.96	21.32	0.36
EU 6	21.57	21.53	- 0.04
EU 9	20.66	20.84	0.18
1973 entrants	17.61	18.50	0.89
New entrants	24.02	26.03	2.01
Objective 1	24.19	25.55	1.36
Japan	29.10	32.13	3.03
US	18.53	18.01	- 0.52

Source(s): CE's, E3ME database, based on Eurostat Cronos, OECD
Note 1: Defined as the ratio of total gross domestic fixed capital formation to GDP
Note 2: Great care should be applied in interpreting the results in this table as cycles tend to differ across Member States.

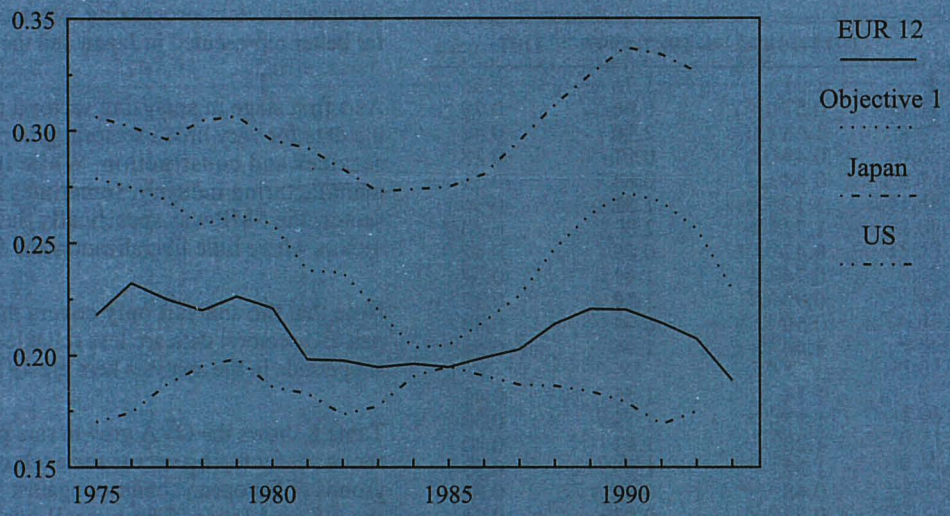
the other hand, Ireland saw a slight decline in its investment to output ratio, because its output growth has been so rapid: Ireland's share of EU aggregate investment has actually increased since 1987, but not as fast as its share of output. Table 6 shows the average investment to output ratio in the different countries pre-1987 and shows the improvement in Spain and Portugal. Comparison with Figure 45 shows that the lower investment to output average ratio in Greece in the second period is due to the decline over 1975-87, which was actually reversed after 1987.

The average R&D spending (see Table 7) to output ratio increased slightly in the second period (by about 0.4 pp) in EU 12 as a whole, more in the EU 9 (0.4 pp) than in the 'new entrants' group (0.2 pp). The performances of the UK (0.5 pp) and, indeed, of the group of countries which entered the EU in 1973 (0.5 pp) have been slightly stronger than the average. The difference between the old and new entrants suggests that it may take several years before the R&D capacity is increased in response to a market enlargement.

7.4.1.2. Broad sectoral analysis

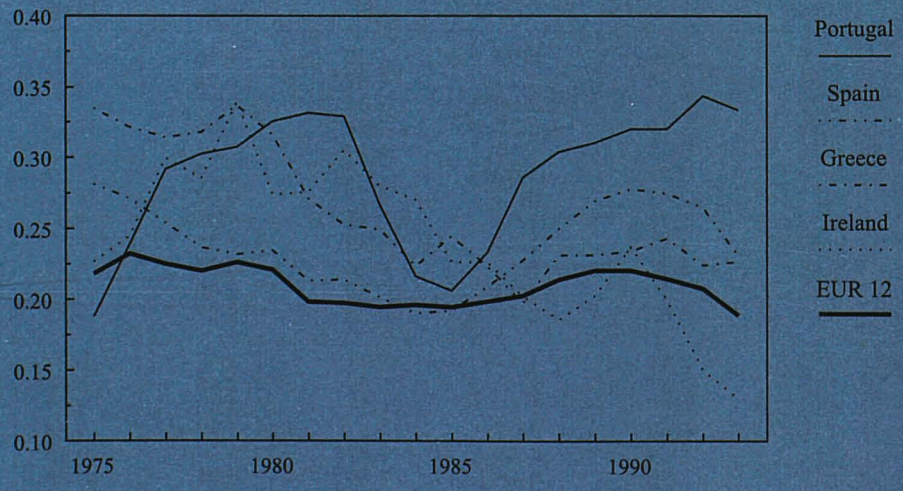
The Cecchini report expected that the impact of the single market would not be uniform across sectors. In particular, it expected the major benefit to be in high-tech sectors where potential dynamic scale economies are higher, in industries

GRAPH 3: **Investment to output ratio**



Source: Cambridge Econometrics (1996).

GRAPH 4: **Investment to output ratio**



Source: Cambridge Econometrics (1996).

Table 7

Average R&D spending to output ratio

	1975-1987	1987-1993	Difference
B	1.21	1.76	0.55
DK	0.57	0.96	0.39
WD	1.68	2.10	0.42
EL	0.49	0.67	0.18
E	0.48	0.84	0.36
F	1.17	1.52	0.35
IRL	1.77	2.30	0.53
I	0.47	0.89	0.42
L	0.74	1.11	0.37
NL	0.93	1.10	0.17
P	0.50	0.94	0.44
UK	1.40	1.94	0.54
EU 12	1.14	1.55	0.41
EU 6	1.17	1.55	0.38
EU 9	1.20	1.62	0.42
1973 entrants	1.32	1.85	0.53
New entrants	0.48	0.82	0.34
Objective 1	0.57	0.93	0.36

Source(s): CE's, E3ME database, based on Eurostat Cronos, OECD
Note 1: Defined as the ratio of R&D spending to GDP
Note 2: Great care should be applied in interpreting the results in this table as cycles tend to differ across Member States.

more dependent on public procurement, and in sectors such as air transport and financial services where competition from foreign firms was still limited by domestic regulations. It also noted that high tech fast-growing industries (like office automation, data-processing, electronics, electric tools) were far better represented in Japan and the US than in Europe.

As a first stage in analysing sectoral performance, we consider the data for very broad sectoral groups: manufacturing, market services and construction. While it is common to focus on manufacturing industry, sometimes identified with the goods sector, the SMP was specifically designed to address service sectors where little liberalization has occurred.

Note that the analysis only covers the period to 1991 because pan-EU sectoral data are less reliable thereafter. Hence the two subperiods in the analysis here are 1975-87 and 1987-91.

Table 8 shows the GVA growth rate pre-1987 and post-1987 in the manufacturing sector for each country and for different groups of European countries against the average growth rate in the US and Japan. The overall growth effect of the single market on EU 12 manufacturing does not appear to be strong. European manufacturing output grew faster after 1987 than it did in the earlier period (by about 1.4 pp per annum on average), and the cumulative gain by 1991 is about 6%, but this

Table 8

GVA growth rates after 1987 compared with 1975-87 trend — manufacturing

	% pa		pp	Cumulative impact (%)				
	1975-87	1987-91	Difference	1987	1988	1989	1990	1991
B	2.60	3.56	0.96	- 1.27	1.46	3.97	5.97	1.75
DK	3.06	1.86	- 1.20	- 4.63	- 6.14	- 6.45	- 7.41	- 9.89
WD	0.73	2.73	2.00	- 2.06	- 0.11	2.27	4.58	5.80
EL	3.99	3.79	- 0.20	- 1.94	1.05	1.74	- 0.46	- 1.73
E	0.75	2.25	1.50	4.14	7.63	10.27	10.19	10.53
F	0.95	2.57	1.62	- 1.12	2.59	5.67	6.56	5.23
IRL	3.37	11.49	8.12	2.22	9.02	26.78	28.12	37.59
I	1.53	2.78	1.25	2.16	7.08	9.07	9.54	7.48
L	1.57	4.5	2.48	- 2.38	5.35	10.73	9.44	8.74
NL	0.47	3.72	3.25	- 0.60	0.85	6.19	9.80	11.57
P	2.20	4.50	2.30	0.89	2.00	6.43	9.35	9.29
UK	0.44	- 0.05	- 0.49	2.25	8.27	9.82	5.99	1.36
EU 12	0.98	2.41	1.43	0.11	3.69	6.27	6.82	5.90
EU 6	1.03	2.81	1.78	- 0.69	2.46	5.14	6.72	6.31
EU 9	0.97	2.39	1.42	- 0.21	3.40	5.97	6.56	5.52
1973 entrants	0.76	0.69	- 0.07	1.67	7.10	9.20	5.90	2.27
New entrants	1.6	2.59	1.53	3.47	6.70	9.45	9.61	9.85
Objective 1	1.22	3.38	2.16	3.39	6.91	10.88	11.20	12.38
Japan	5.23	7.50	2.27	2.09	6.10	8.85	11.23	12.32
US	2.83	0.73	- 2.10	1.65	4.03	2.14	- 1.09	- 6.13

Source(s): CE's E3ME database, based on Eurostat Cronos, OECD
Note: Great care should be applied in interpreting the results in this table as cycles tend to differ across Member States.

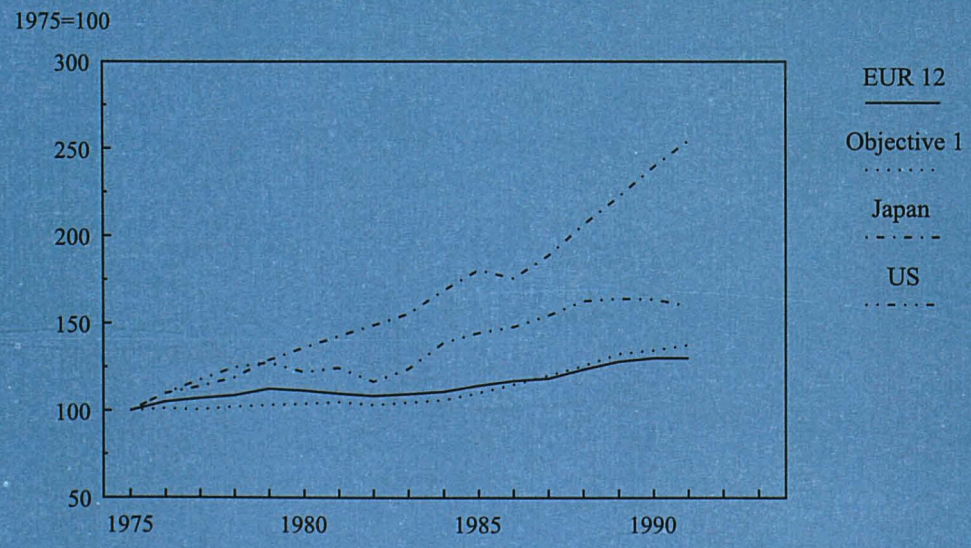
Table 9

GVA per worker growth rates after 1987 compared with 1975-87 trend — manufacturing

	% pa		pp	Cumulative impact (per cent)				
	1975-87	1987-91	Difference	1987	1988	1989	1990	1991
B	5.68	3.80	−1.88	−2.14	−0.57	−3.03	−3.71	−9.46
DK	2.62	5.77	3.15	−2.59	−1.80	−0.52	8.97	9.02
WD	1.16	1.46	0.30	−2.58	−0.73	0.00	−0.63	−1.04
EL	2.14	3.82	1.68	1.86	8.64	9.19	8.71	10.75
E	3.50	0.77	−2.73	−1.94	−2.92	−5.98	−11.48	−11.18
F	2.88	3.02	0.14	−0.48	3.13	4.10	2.67	0.76
IRL	4.39	8.88	4.49	3.57	7.41	19.04	15.53	24.90
I	2.85	2.84	−0.01	1.72	4.01	4.29	3.48	2.18
L	4.22	4.05	−0.17	−2.42	2.66	5.44	1.45	−1.90
NL	2.15	1.41	−0.74	−4.02	−4.87	−2.80	−6.48	−6.77
P	2.34	3.51	1.17	3.19	6.15	8.55	9.86	7.56
UK	3.94	2.54	−1.40	−3.20	−0.87	−1.57	−5.81	−7.43
EU 12	2.69	2.43	−0.26	−1.59	0.38	0.60	−1.05	−2.00
EU 6	2.23	2.27	0.04	−1.11	1.10	1.77	0.71	−0.57
EU 9	2.71	2.60	−0.11	−1.75	0.30	0.79	−0.59	−1.67
1973 entrants	3.92	3.20	−0.72	−3.02	−0.82	−0.82	−3.94	−4.70
New entrants	2.60	1.46	−1.14	0.69	2.00	0.63	−2.75	−2.48
Objective 1	2.73	2.18	−0.55	0.81	2.36	2.11	−1.18	0.03
Japan	4.80	5.41	0.61	3.87	6.12	7.15	8.35	6.61
US	3.00	1.44	−1.56	1.08	1.04	−1.36	−3.04	−4.62

Source(s): CE's E3ME database, based on Eurostat Cronos, OECD.
Note: Great care should be applied in interpreting the results in this table as cycles tend to differ across Member States.

GRAPH 5: **GVA levels: manufacturing**



Source: Cambridge Econometrics (1996).

is less than for Japan and the short period considered after 1987 does not justify any firm conclusion. Graph 5 shows that a modest acceleration after 1987 was subsequently reversed with the onset of the recession. Productivity growth (Table 9) actually slowed slightly after 1987.

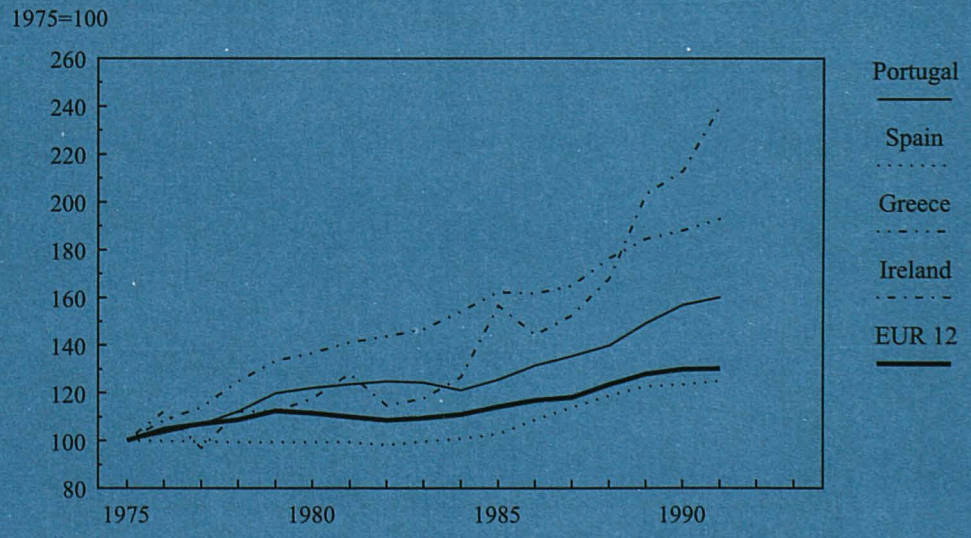
Graph 6 shows the profile of manufacturing GVA for Spain, Portugal, Greece and Ireland. The dramatic increase in Ireland's growth rate after 1987 is apparent: growth over the period 1987-91 was over 8 pp higher than in the previous period. Portugal and, to a lesser extent, Spain also saw their growth rates increase by more than did that of the EU 12 as a whole, while Greece maintained a higher than average growth rate (about 4% p.a. in the period before 1987 and slightly less afterwards). Hence, on average, cohesion countries saw an acceleration in the growth rate of manufacturing after 1987, but with an uneven distribution (with Ireland strongly favoured).

In market services the picture is quite different. While Japan and the US saw slower growth in the second period than in the first, the EU 12 saw an increase as Graph 7 shows, and in this case the EU 6 Germany, Italy, France and Benelux saw the biggest increase. The cumulative gain with respect to Japan and the US is more than 5% in 1991 for the EU 12 and more than 7%, Table 10). The 'new entrants' countries seem to have seen slower growth after 1987, although the Spanish data are suspect and require further analysis. Certainly Portugal and Ireland saw a relative improvement, shown in Graph 8.

In conclusion, market services have seen an improved performance in terms of output during the post-1987 period, affecting not only the poorest countries, but also the most developed countries in Europe. Only the UK saw a weaker performance in the second period (2.5% per annum versus 3.5% per annum). The tentative conclusion could be that the favourable impact of the SMP has been felt primarily in the services sector in the older Member States and in both the manufacturing and the services sector in the new entrants.

Construction has seen the most marked increase in output, particularly in Spain, Portugal and Greece. The EU 12 average growth rate in construction output was around 0.1% per annum in the first period and about 3.6% per annum in the second. Graph 9 shows the coincidence in timing between the acceleration in construction output and the start of the SMP. There was also a marked increase for the 'new entrants'. Graph 10 shows the performances of Spain, Portugal, Greece and Ireland, with Spain and Portugal seeing the largest effects. Clearly the fact that EU regional funding is mostly related to infrastructure work is a factor that needs to be distinguished from private sector investment stimulated by the SMP.

GRAPH 6: **GVA levels: manufacturing**



Source: Cambridge Econometrics (1996).

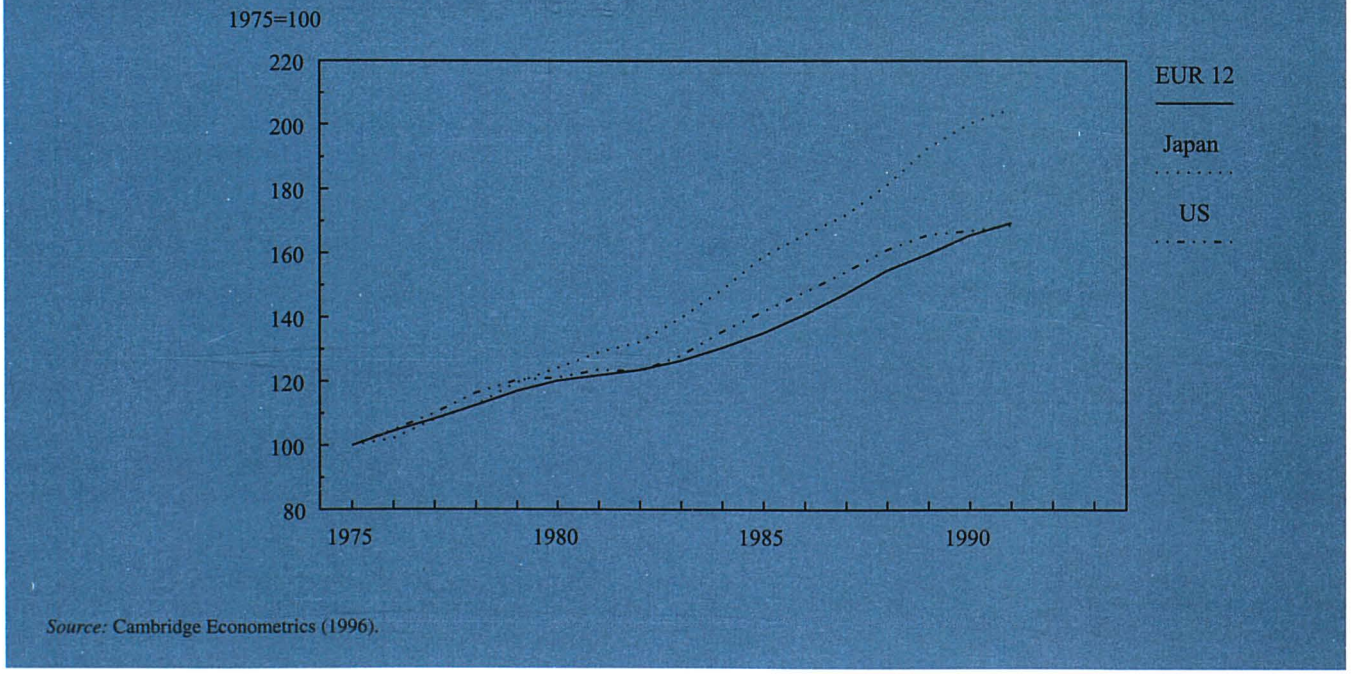
Table 10

GVA growth rates after 1987 compared with 1975-87 trend — market services

	% pa		pp	Cumulative impact (per cent)				
	1975-87	1987-91	Difference	1987	1988	1989	1990	1991
B	2.22	3.76	1.54	1.60	4.90	7.17	6.57	8.85
DK	2.09	2.36	0.27	0.87	0.96	0.11	0.77	2.46
WD	3.29	5.69	2.40	0.37	2.30	3.62	7.51	10.63
EL	2.83	3.45	0.62	–3.01	–0.97	0.57	–0.58	0.26
E	1.77	–1.75	–3.52	3.16	6.33	–5.15	–6.23	–7.30
F	3.00	2.99	–0.01	1.07	2.05	3.82	2.66	1.00
IRL	3.77	8.38	4.61	3.72	4.27	11.15	16.18	22.74
I	2.69	3.33	0.64	0.71	2.14	2.87	3.54	3.52
L	4.44	6.75	2.31	3.34	4.31	10.46	13.60	11.62
NL	2.57	4.38	1.81	5.23	5.46	6.13	11.22	11.97
P	2.06	5.28	3.22	6.18	9.08	11.92	18.36	18.45
UK	3.54	2.46	–1.08	4.10	6.73	8.45	5.85	–0.44
EU 12	2.94	3.45	0.51	1.81	3.61	4.10	4.72	4.14
EU 6	2.95	4.15	1.20	1.09	2.55	3.87	5.37	6.14
EU 9	3.05	3.81	0.76	1.68	3.35	4.74	5.41	4.83
1973 entrants	3.39	2.61	–0.78	3.77	6.12	7.74	5.65	0.46
New entrants	1.86	–0.68	–2.54	3.11	6.19	–3.17	–3.38	–4.19
Objective 1	1.95	–0.09	–2.04	3.16	6.12	–2.33	–2.17	–2.42
Japan	4.62	4.52	0.10	–0.88	–0.02	1.79	1.03	–1.33
US	3.27	2.14	–1.13	0.95	2.09	1.75	–0.81	–3.07

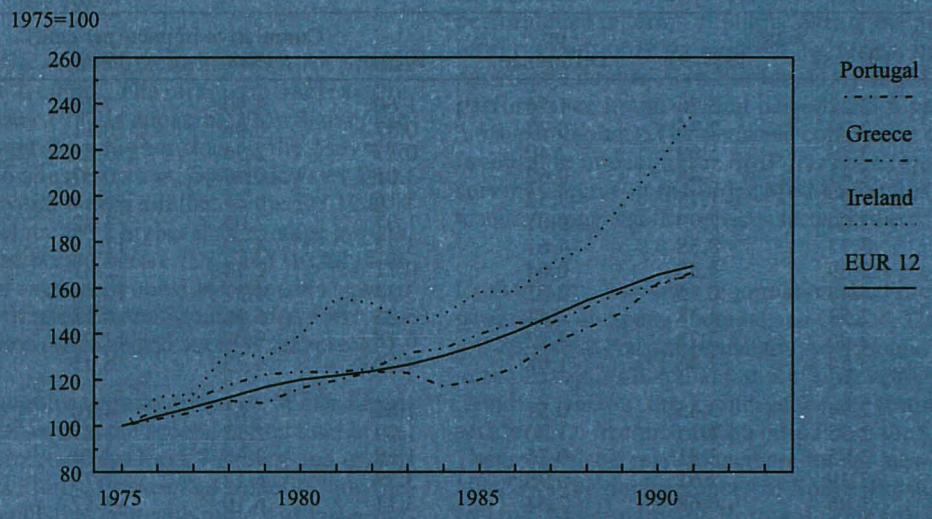
Source(s): CE's E3ME database, based on Eurostat Cronos, OECD
Note: Great care should be applied in interpreting the results in this table as cycles tend to differ across Member States.

GRAPH 7: **GVA levels: market services**



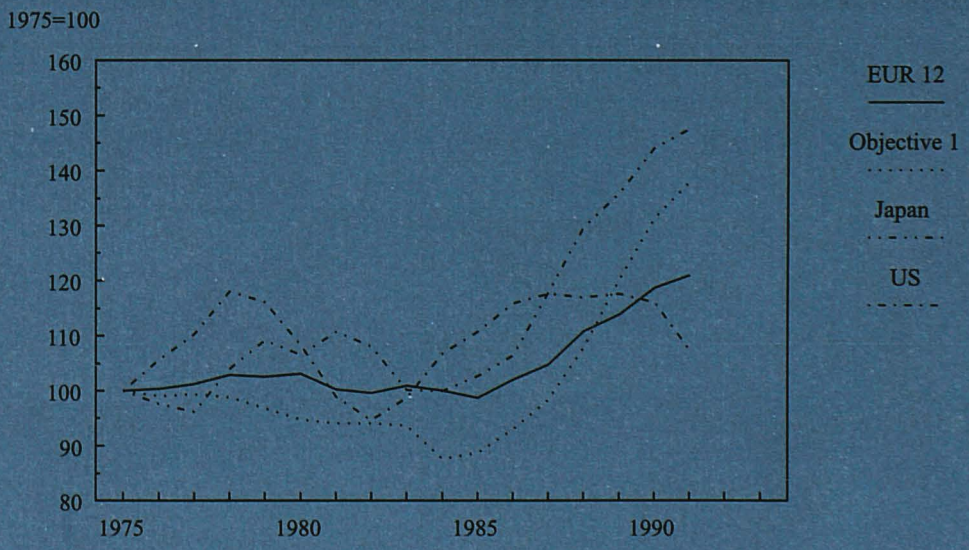
Source: Cambridge Econometrics (1996).

GRAPH 8: **GVA levels: market services**



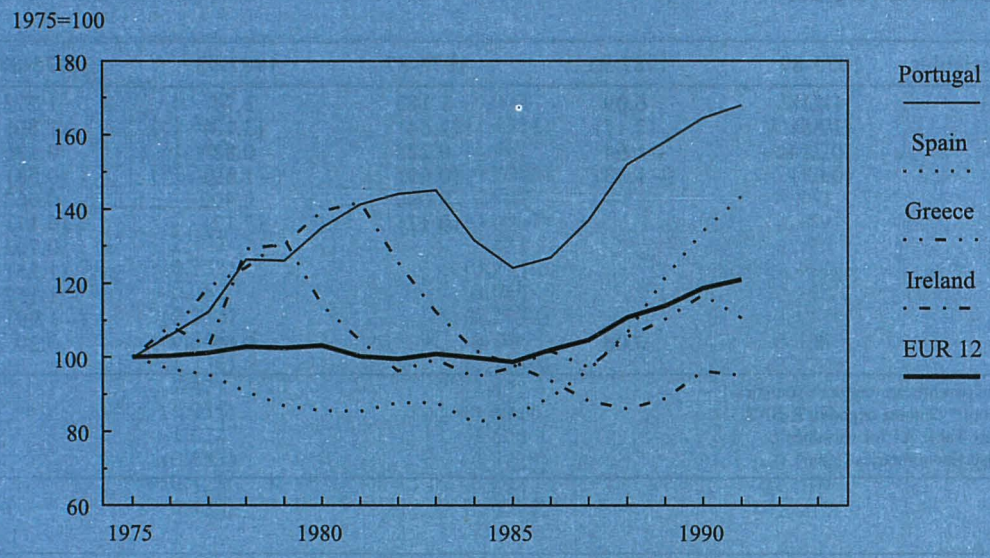
Source: Cambridge Econometrics (1996).

GRAPH 9: **GVA levels: construction**



Source: Cambridge Econometrics (1996).

GRAPH 10: **GVA levels: construction**



Source: Cambridge Econometrics (1996).

7.4.2. Econometric analysis

The Cambridge Econometrics (CE) study tries to assess the different aspects of convergence, using mainly regression analysis. The analysis is applied to the national data pooled for the EU 12, and the set of regional data obtained by pooling the regional data across the 12 Member States. In accordance with the common practice in Barro-type growth regressions, the average growth of gross value added per capita over the period is regressed on the logarithm of the level of GVA per capita at the start of the period, and variables such as the investment to output ratio, the R&D to output ratio, changes in the participation rate and a proxy for human capital.

In order to allow for the possible impact of the internal market on growth and the speed of convergence, the period 1975-93 is split into the period up to and including 1987 and the post-1987 period. Dummy variables are used to proxy the impact of EU membership and to represent the differential impact on subgroupings of the Member States. Southern Italy and the part of Spain which receives Objective 1 support are added to the list of countries in some of the regressions because of their entitlement to structural funds and the possibility that the effects of the internal market in these regions, which are larger in size than many of the individual Member States, are different from those in the rest of the country.

The basic neoclassical model of Solow assumes the existence of a common steady state of GVA per capita to which each country is converging. A country's growth rate depends on how far the economy is from this steady state. The coefficient of the log of the starting level of GVA per capita determines the speed of convergence. A negative coefficient means that, apart from the influence of other variables, a process of convergence has been proceeding over the period. An interaction term is included to allow this coefficient to change for the two different subperiods. A negative coefficient on this term means that the convergence process accelerated from 1987 onwards.

7.4.2.1. The results without conditioning variables

A simple regression with the average growth rate on the left-hand side and the starting level of GVA per capita on the right-hand side was estimated separately for the two time periods

The estimate of the coefficient of the starting level of per capita GVA (beta) turns out to be positive for the pre-1987 period and negative for the SMP period, but in neither case it is significant. Controlling for Ireland, by introducing a dummy, dramatically improves the goodness of fit. It also improves the statistical of the negative beta-coefficient for the second period (see Table 11).

Table 11

Unconditional beta-convergence

Explanatory variables	1975-87	1987-93	1975-87	1987-93	1975-87	1987-93
Constant	1.218	6.09	1.183	3.74	1.273	3.77
	(1.85)	(2.17)	(1.64)	(3.13)	(1.80)	(3.00)
gvapv	0.214	– 1.64	0.228	– 0.824	0.196	– 0.820
	(0.67)	(– 1.33)	(0.65)	(– 1.59)	(0.58)	(– 1.57)
ire			0.099	6.402	0.062	6.365
			(0.17)	(7.12)	(0.11)	(7.09)
sita					0.705	–0.986
					(1.25)	(– 1.11)
spa					– 1.152	0.045
					(– 1.99)	(0.05)
R-BAR	*	0.06	*	0.85	0.20	0.82

Note(s): Figures in parentheses denote t-statistics.
The symbol * denotes negative R-BAR.
See Annex Table A1 for variables.
Source: Cambridge Econometrics (1996).

Table 12

Growth regression: OLS estimates (EUR 12)

Explanatory variables				
Constant	–0.08	–0.52	3.15	7.57
	(–0.03)	(–0.16)	(0.89)	(2.62)
pogvapc	–1.450	–0.78	–3.58	–2.55
	(–1.75)	(–0.51)	(–1.76)	(–2.45)
accel		–1.04	6.33	3.74
		(–0.53)	(2.15)	(2.16)
poedu	1.81	1.79	3.00	0.17
	(0.69)	(0.66)	(1.23)	(0.13)
poavlab	0.167	0.132	0.223	0.2155
	(0.98)	(0.70)	(1.34)	(2.41)
poinv	0.0700	0.0601	0.187	0.1656
	(0.74)	(0.61)	(1.78)	(2.56)
porsd	1.702	1.710	1.787	0.741
	(1.82)	(1.78)	(2.26)	(1.58)
poaveu	0.68	–0.03	–0.81	–4.91
	(0.34)	(–0.01)	(–0.39)	(–1.64)
poim	0.516	2.73	–15.19	–8.48
	(0.66)	(0.64)	(–2.19)	(–2.06)
poire				4.84
				(2.01)
intire				1.02
				(0.38)
poob1			–3.44	–6.48
			(–1.64)	(–2.53)
intob1			7.95	7.58
			(2.89)	(2.42)
R-BAR	0.205	0.168	0.434	0.863

Note(s): Figures in parentheses denote t-statistics.
See Annex Table A1 for variables.
Source: Cambridge Econometrics (1996)

Table 13

Growth regression: IV estimates (EUR 12)

Explanatory variables				
Constant	−8.074	−8.072	2.624	7.889
	(−1.345)	(−1.4354)	(0.649)	(2.217)
pogvapc	−1.360	−1.362	−5.707	−2.720
	(−1.321)	(−0.7053)	(−2.108)	(−1.877)
accel		0.002	8.853	4.027
		(0.0007)	(2.369)	(1.584)
poedu	2.472	2.472	4.276	0.286
	(0.733)	(0.7156)	(1.446)	(0.209)
poavlab	0.062	0.062	0.168	0.217
	(0.282)	(0.2632)	(0.871)	(2.359)
poinv	0.346	0.346	0.388	0.184
	(1.736)	(1.7942)	(2.172)	(1.429)
porsd	2.471	2.471	2.211	0.759
	(1.950)	(1.8916)	(2.295)	(1.224)
poaveu	1.674	1.675	−0.574	−5.312
	(0.653)	(0.5239)	(−0.244)	(−1.305)
poim	0.428	0.424	−21.070	−9.143
	(0.438)	(0.0777)	(−2.402)	(−1.513)
poire				5.189
				(1.546)
intire				0.623
			−5.905	(0.159)
poob1			(−2.038)	−6.982
			10.635	(−1.696)
intob1			(2.960)	8.169
				(1.622)
R-BAR	*	*	0.272	0.862

Note(s): Figures in parentheses denote t-statistics.
The symbol * denotes negative R-BAR.
See Annex Table A1 for variables.
Source: Cambridge Econometrics (1996)

The same regressions were run for the set of 'countries' including southern Italy and Objective 1 Spain. This did not improve the convergence result. Southern Italy appears to have performed better than average in the first period, given the starting value of its GVA per capita, but worse in the second. The opposite appears to be the case for Objective 1 Spain.

7.4.2.2. The results when other variables are introduced

The next thing is to add possible explanatory variables which could be subject to change as a consequence of the internal market. The data for the two subperiods are now pooled. Zero-one variables are introduced for EU membership and the internal market. The investment to output and the R&D to output are used as additional right-hand side variables. A dummy for Greece, Spain, Ireland and Portugal was introduced to represent the Objective 1 status of these countries (see Annex Tables A1 and A2 for the list of variables and see Tables 12 and 13).

The results suggest that there are strong interactions between the SMP impact and the changes in the investment and R&D variables. The coefficient on the starting level of GVA per capita is negative, but not significant. The coefficient of the SMP dummy is positive but not very robust to alternative specifications. Removing the investment and R&D terms increases the significance of the SMP term without surpassing the critical value for the t-statistic. This finding seems to conform with the observation of Baldwin and Venables (1995) that in most studies employing Barro-style regressions the proxy for integration proves to be insignificant because of the presence of the investment to output stands in the way of finding a positive impact of economic integration on convergence (see Table 14).

The regressions do not show a significant increase in the speed of convergence due to the SMP. Again the coefficient of the interaction term is not robust to the specification, and it is positive when significant. That is in the case where dummies

Table 14

Growth regression: OLS estimates (EUR 12)

Explanatory variables				
Constant	2.02	1.25	4.33	4.44
	(1.44)	(0.63)	(1.06)	(1.43)
pogvapc	−1.473	−0.76	−1.88	−1.08
	(−1.70)	(−0.48)	(−0.96)	(−1.07)
accel		−1.10	4.21	0.91
		(−0.55)	(1.38)	(0.57)
poedu	4.00	4.06	4.05	−0.28
	(1.76)	(1.75)	(1.83)	(−0.21)
poavlab	0.169	0.127	0.253	0.181
	(0.98)	(0.66)	(1.33)	(1.76)
poinv				
porsd				
poaveu	0.66	−0.05	−0.84	−0.62
	(0.32)	(−0.02)	(−0.35)	(−0.21)
poim	1.156	3.53	−9.65	−1.68
	(1.64)	(0.81)	(−1.34)	(−0.44)
poire				1.25
				(0.53)
intire				5.57
				(2.33)
poob1			−1.42	−1.60
			(−0.75)	(−0.78)
intob1			5.64	1.50
			(2.07)	(0.60)
R-BAR	0.168	0.105	0.233	0.862

Note(s): Figures in parentheses denote t-statistics.
See Annex Table A1 for variables.
Source: Cambridge Econometrics (1996)

for Objective 1 status and the exceptional Irish performance are added to the regression. The overall internal market impact then appears to be strongly negative, but this is compensated by the addition to growth in the non-Objective 1 countries. If there is an increase in the speed of convergence, this appears to be due to the faster post-1987 growth in Ireland and the other cohesion countries.

The coefficient for the Objective 1 countries is negative in the first period and positive and significant in the second period. This implies that Objective 1 countries have not been growing as fast as would have been expected on the basis of their GVA per capita level in the pre-SMP period, but they have been growing significantly faster in the SMP period. The estimated SMP effect on the overall speed of convergence suggest a slowdown. The CE study comes forward with the tentative explanation that the convergence between the richer Member States did not go on after 1987, whereas the Objective 1 countries started to catch up.

An important question is whether the catch-up process of the poorest Community countries is explained by their accession to the EU or by their participation in the internal market. It is difficult to disentangle the two effects because of the temporal coincidence between the accession of Spain and Portugal to the EU and the implementation of the SMP. The EU entry dummy receives a very low coefficient, suggesting that the SMP effects is more important. The coincidence of strong growth in Ireland with the implementation of the SMP supports this interpretation (see Tables 15, 16 and 17).

If growth in the poorer economies accelerated in the second period, this does not seem to be true for the rest of the European countries. This result seems to be robust to changes in the specification and the use of alternative regression techniques. Distinguishing Objective 1 Spain and southern Italy in the sample does not change this result either, but there are indications that the convergence of southern Italy has been reversed in the SMP period, whereas it has not changed for Objective 1 Spain.

Table 15

Growth regression: OLS estimates (EUR 12 +2)

Explanatory variables						
Constant	−0.04	−0.23	2.17	3.33	−0.58	−0.28
	(−0.01)	(−0.08)	(0.54)	(1.78)	(−0.18)	(−0.09)
pogvapc	−1.270	−0.92	−3.30	−2.14	−0.54	−0.85
	(−1.77)	(−0.77)	(−1.24)	(−1.64)	(−0.40)	(−0.67)
accel		−0.56	4.36	1.30	−1.08	−0.71
		(−0.36)	(1.24)	(0.77)	(−0.62)	(−0.42)
poedu	0.71	0.57	1.70	−1.09	0.68	0.78
	(0.29)	(0.23)	(0.66)	(−0.75)	(0.24)	(0.28)
poavlab	0.159	0.140	0.243	0.1332	0.122	0.125
	(1.04)	(0.85)	(1.39)	(1.57)	(0.69)	(0.70)
poinv	0.0676	0.0594	0.130	0.0550	0.0550	0.0651
	(0.76)	(0.64)	(1.20)	(1.02)	(0.57)	(0.65)
porsd	1.793	1.819	1.668	0.366	1.803	1.760
	(2.01)	(1.99)	(1.86)	(0.83)	(1.90)	(1.79)
poaveu	0.86	0.58	1.48	1.95	0.12	0.35
	(0.52)	(0.31)	(0.67)	(1.61)	(0.05)	(0.17)
poim	0.304	1.47	−10.14	−2.62	2.72	1.83
	(0.44)	(0.45)	(−1.26)	(−0.67)	(0.72)	(0.50)
posspa						−0.68
						(−0.39)
intsspa						0.46
						(0.20)
posita					1.07	
					(0.63)	
intsita					−1.79	
					(−0.82)	
poire				0.134		
				(0.14)		
intire				6.99		
				(6.17)		
poob1			−1.80	−1.308		
			(−0.96)	(−1.51)		
intob1			4.17	0.37		
			(1.61)	(0.29)		
R-BAR	0.223	0.188	0.226	0.838	*	*

Note(s): Figure in the parenthesis denote t-statistics.
The symbol * denotes negative R-BAR.
Italy and Spain are divided into their Objective 1 and non-Objective 1 parts.
See Annex Table A1 for variables.
Source: Cambridge Econometrics (1996)

7.4.2.3. OECD control group

An interesting extension of the exercise and a check on the results is provided by the use of the full data set on GDP per capita in all the OECD countries. As in the previous section, the possibility of unconditional beta-convergence across OECD countries was investigated by estimating growth equations without additional explanatory variables. The equations were estimated separately for the two periods. Zero-one variables for EU membership, Objective 1 status and the exceptional performance of Ireland were included (see Tables 18 and 19).

The positive coefficient on the starting level of GDP per capita (see first column of Table 18) indicates that convergence was not a feature of growth across OECD countries over the period 1975-92. By contrast, the convergence coefficient obtained by estimating the same equation over the second period is significantly negative.

This result simply reflects that, within the group of OECD countries, the poor countries showed faster growth than the rest in the SMP period, whereas the opposite was the case in the period before the start of the SMP. EU membership appears to

Table 16

Growth regression: IV estimates (EUR 12 +2)

Explanatory variables						
Constant	-9.269	-8.409	0.839	3.614	-9.317	-7.600
	(-1.381)	(-1.4665)	(0.182)	(1.838)	(-1.5584)	(-1.3091)
pogvapc	-1.274	-1.644	-6.239	-1.557	-1.390	-1.413
	(-1.399)	(-1.0551)	(-1.778)	(-0.938)	(-0.7639)	(-0.8938)
accel		0.601	8.105	0.569	0.288	0.244
		(0.2937)	(1.756)	(0.267)	(0.1221)	(0.1159)
poedu	1.872	1.863	2.634	-1.504	2.228	1.924
	(0.556)	(0.5502)	(0.857)	(-0.889)	(0.5919)	(0.5513)
poavlab	0.046	0.075	0.230	0.139	0.058	0.057
	(0.219)	(0.3540)	(1.175)	(1.596)	(0.2520)	(0.2603)
poinv	0.377	0.364	0.353	0.015	0.383	0.342
	(1.722)	(1.8257)	(1.922)	(0.170)	(1.8655)	(1.7932)
porsd	2.515	2.479	2.177	0.284	2.447	2.400
	(2.049)	(2.0105)	(2.026)	(0.582)	(1.8468)	(1.8670)
poaveu	2.434	2.614	3.834	1.442	2.370	1.878
	(1.050)	(1.0155)	(1.320)	(0.947)	(0.7904)	(0.7141)
poim	0.253	-1.009	-18.781	-0.935	-0.189	-0.241
	(0.287)	(-0.2326)	(-1.775)	(-0.190)	(-0.0369)	(-0.0532)
posspa						-1.360
						(-0.6258)
intsspa						1.307
						(0.4599)
posita					0.901	
					(0.4077)	
intsita					-1.360	
					(-0.4760)	
poire				0.370		
				(0.344)		
intire				6.962		
				(5.964)		
poob1			-3.837	-1.000		
			(-1.553)	(-0.970)		
intob1			6.635	-0.095		
			(2.013)	(-0.063)		
R-BAR	*	*	0.025	0.832	0.127	0.101

Note(s): Figure in the parenthesis denote t-statistics.
The symbol * denotes negative R-BAR.
Italy and Spain are divided into their Objective 1 and non-Objective 1 parts.
See Annex Table A1 for variables.
Source: Cambridge Econometrics (1996)

have made little difference in the first period, but is estimated to have had a significantly positive influence in the second period. This suggests that the greater degree of convergence after 1987 is, at least in part, due to the internal market initiative in the Community (see Table 20).

Conditioning the regressions on other variables and pooling the data over the two periods, shows that the investment variable and the Irish performance have been the dominating influences on the pattern of economic growth among the OECD countries. The internal market variable acts as an acceleration term to EU membership, but within the larger group of OECD countries the estimation does not confirm that the internal market has had an effect which is more important than EU membership.

Apart from the last result, the findings using the OECD data set, which has a broader geographic coverage for a more limited selection of variables and which uses different sources, confirms the earlier analysis which was based on data for the Community alone.

Table 17

Growth regression: OLS estimates (EUR 12 +2)

Explanatory variables						
Constant	1.85	1.47	3.39	3.80	1.00	1.58
	(1.53)	(0.84)	(0.80)	(2.10)	(0.51)	(0.86)
pogvapc	−1.245	−0.94	−1.91	−1.40	−0.56	−0.83
	(−1.65)	(−0.76)	(−0.81)	(−1.38)	(−0.40)	(−0.64)
accel		−0.49	2.89	0.37	−1.01	−0.82
		(−0.31)	(0.93)	(0.28)	(−0.57)	(−0.48)
poedu	3.34	3.31	3.62	−1.28	3.37	3.39
	(1.73)	(1.68)	(1.84)	(−1.16)	(1.50)	(1.65)
poavlab	0.163	0.143	0.256	0.1371	0.121	0.120
	(1.04)	(0.83)	(1.37)	(1.65)	(0.66)	(0.66)
poaveu	0.79	0.59	0.46	1.369	0.17	0.27
	(0.48)	(0.33)	(0.23)	(1.45)	(0.08)	(0.13)
poim	0.942	1.97	−6.23	−0.38	3.24	2.73
	(1.51)	(0.58)	(−0.86)	(−0.12)	(0.84)	(0.74)
posspa						−0.82
						(−0.46)
intsspa						0.03
						(0.01)
posita					1.07	
					(0.60)	
intsita					−1.93	
					(−0.84)	
poire				0.396		
				(0.44)		
intire				7.17		
				(6.84)		
poob1			−0.77	−0.899		
			(−0.45)	(−1.19)		
intob1			3.16	−0.28		
			(1.33)	(−0.26)		
R-BAR	0.141	0.105	0.119	0.842	0.046	0.33

Note(s): Figure in the parenthesis denote t-statistics.
The symbol * denotes negative R-BAR.
Italy and Spain are divided into their Objective 1 and non-Objective 1 parts.
See Annex Table A1 for variables.
Source: Cambridge Econometrics (1996)

7.4.2.4. Results on regional convergence across the Community

The CE study contains a similar analysis of convergence and growth among the regions of the Community. The data set for this exercise is much larger, and contains information on 169 regions at the NUTS 2 level. Tables 21 and 22 give the estimated effects of the straightforward regression of unconditional convergence and the changes in the result when explanatory variables are added one by one or all together. The comparison of the last two sets of results provides an indication of the robustness and the interaction of the estimated coefficients.[1]

[1] A comparison with the estimated convergence rate of the Member State regressions can be made by calculating the beta-coefficient as $-100*(1-e^{-bT})/T$, where b is the estimated coefficient of lgvapc and T the length of the period under consideration. For all practical purposes, this can be approximated by -100*b when b is small (see again Tables A1 and A2 for a glossary of the variable names).

Table 18

Unconditional beta-convergence over the period 1975-87 (OECD countries)

Explanatory variables				
Constant	-0.97	-0.89	-0.34	0.16
	(-0.47)	(-0.43)	(-0.13)	(0.06)
gvapc	0.324	0.322	0.262	0.211
	(1.38)	(1.35)	(0.90)	(0.72)
aveu		-0.153	-0.147	-0.248
		(-0.49)	(-0.46)	(-0.76)
Ob1			-0.177	-0.466
			(-0.37)	(-0.86)
Ire				0.993
				(1.13)
R-BAR	3.8	0.4	*	*

Note(s): Figures in parentheses denote t-statistics.
See Annex Table A1 for variables.
Source: Cambridge Econometrics (1996).

Table 19

Unconditional beta-convergence over the period 1987-93 (OECD countries)

Explanatory variables				
Constant	10.74	6.84	4.54	6.35
	(2.34)	(1.56)	(0.89)	(1.33)
gvapc	-1.016	-0.667	-0.417	-0.614
	(-2.01)	(-1.41)	(-0.75)	(-1.19)
aveu		1.504	1.304	1.293
		(2.55)	(2.06)	(2.21)
Ob1			0.870	-0.11
			(0.88)	(-0.11)
Ire				3.21
				(2.14)
R-BAR	11.6	29.4	28.6	39.5

Note(s): Figures in parentheses denote t-statistics.
See Annex Table A1 for variables.
Source: Cambridge Econometrics (1996).

Analysis at the regional level suggests that there was a faster rate of 'unconditional' convergence (i.e. simply comparing growth rates with starting per capita income levels) post 1987. This appears to be due to an improved performance by the regions which were lagging behind (border regions, Objective 1 and Objective 2 regions are distinguished in the analysis). Convergence was proceeding at a slightly faster rate and these regions were no longer performing below par, in the sense that their growth rates were higher than what could have been expected on the basis of their starting level of per capita income. The estimated equations suggest that, other things being equal, the poorer regions would have experienced faster growth than the rich ones.

The favourable effect of the internal market on border regions is particularly evident. There is also some indication that the internal market played a role in turning around the convergence behaviour of peripheral regions and Objective 1 and 2 regions. Previous to the SMP, growth in these regions was slower than what could have been expected from applying the neoclassical hypothesis to their starting level of income per capita. After 1987, that negative effect has disappeared.

Table 20

Growth regression: OLS estimates

Explanatory variables				
Constant	–0.92	–1.83	–1.82	–2.14
	(–0.30)	(–0.56)	(–0.52)	(–0.64)
pogdppc	–0.097	–0.002	–0.028	–0.030
	(–0.35)	(–0.01)	(–0.08)	(–0.10)
accel		–0.598	2.39	–0.01
		(–0.82)	(1.60)	(–0.01)
poinv	0.1273	0.1299	0.1394	0.1543
	(2.65)	(2.69)	(2.96)	(3.43)
poaveu	0.735	0.763	0.802	0.740
	(1.60)	(1.65)	(1.79)	(1.70)
poim	0.913	6.20	–21.3	0.7
	(1.82)	(0.95)	(–1.57)	(0.04)
poire				1.17
				(0.95)
intire				2.41
				(1.25)
poob1			–0.205	–0.493
			(–0.31)	(–0.70)
intob1			3.58	0.77
			(2.20)	(0.38)
R-BAR	20.8	20.2	25.8	33.6

Note(s): Figure in the parentheses denote t-statistics.
See Annex Table A1 for variables.
Source: Cambridge Econometrics (1996).

7.4.2.5. Empirical results on regional convergence within the Member States

The equations estimated above impose the restriction that the rate of within-country regional convergence is the same in all Member States and that there is no country-specific influence on regional development other than the one captured by the differences in the explanatory variables. As a catch-all for possible country-specific influences which are not reflected in the explanatory variables, zero-one variables representing the country have been introduced in the regression of the regional data. A comparison of the results with and without country dummies may give an indication of differences in the within-country rates of regional convergence (see Tables 23 and 24).

For the period 1987-93, the estimated overall rate of convergence does hardly change in size, although the coefficient becomes statistically insignificant if country dummies are included. For the pre-SMP period, the conclusions are different. The overall rate of convergence was insignificant in the earlier period, but the use of country dummies makes it highly significant and increases the estimated speed of convergence. Regional convergence within the Member States before 1987 is estimated to have taken place at a rate of 1% per year on average. The difference between the estimates for the two periods suggests that, with respect to regional convergence, it has become less important to which Member State the region belongs. After 1987, regional convergence appears to have become a feature of the Community rather than a national characteristic.

7.5. Growth and convergence in the less-developed regions

This section focuses on the SMP effects in the less developed cohesion countries of the Union, namely, Ireland, Portugal, Spain and Greece. While the elimination of barriers to the movement of products and factors of production fostered by the SMP produced welfare gains for the Union as a whole and for the less developed regions as a group (7.4.2.1. - 7.4.2.5. above), the results for the latter group are greatly influenced by the impressive growth performance of Ireland and to a lesser extent

Table 21

Regressions based on 1987-93 growth (without country dummies)

Explanatory Variables	Unconditional	Conditional						
		Direct effects	Total effects					
Constant	0.02590 (6.076)	0.029549 (2.661)	0.03963 (4.401)	0.02557 (5.975)	0.02975 (3.882)	0.02577 (6.039)	0.02424 (5.892)	0.02717 (6.259)
Igvapc[87]	0.00471 (2.371)	0.006634 (1.707)	0.00964 (2.724)	0.00574 (2.502)	0.00633 (1.883)	0.00452 (2.266)	0.00507 (2.652)	0.00363 (1.722)
luxdij		−0.000960 (−0.282)	−0.00483 (−1.728)					
es[75]		0.006548 (0.632)		0.00873 (0.919)				
ps[1]		−0.001050 (−0.269)			−0.00203 (−0.605)			
ps[2]		−0.003306 (−1.232)				−0.00235 (−0.893)		
border[93]		0.005703 (2.962)					0.00641 (3.911)	
hcap		−0.000564 (−0.861)						−0.00085 (−1.433)
Moran'sI	0.2129 (7.96)	0.1363 (5.90)	0.1948 (7.51)	0.2093 (7.95)	0.2086 (7.92)	0.2115 (7.93)	0.1469 (5.73)	0.1977 (7.76)

Note(s): Figures in the parentheses denote t-statistics.
See Annex Table A2 for variables.
Source: Cambridge Econometrics (1996).

Portugal. A more careful analysis indicates that the SMP effects have been very different from one country to another. Moreover, given that the launch of the SMP was accompanied by a significant Community regional policy package which ensured large flows of structural funds to the less-developed regions, it is useful to try to distinguish the effects of structural funds spending on the favourable growth performance post 1987 from the SMP effects.[1]

7.5.1. Effects of economic integration

The variety in the impact of the SMP among cohesion countries can be attributed to the structural characteristics of each of these economies before 1987 and the share in output and employment of the sectors that were more sensitive to the SMP. Despite a number of shared characteristics compared to other EU countries, like the relative importance of agriculture, the relative underdevelopment of physical infrastructure, the size and structure of enterprises, etc., these countries had a different structure of manufacturing and service sectors before 1987 and, therefore, it was expected that their economies would react differently to the SMP. With the opening up of markets, the tradable components of these economies became bigger as successful sectors expanded through capturing increased market share in the EU market, while unsuccessful ones

[1] Some of the results in this section are based on two background studies prepared for the report, namely ESRI et al. (1996) and CERES et al. (1996).

Table 22

Regressions based on 1975-87 growth (without country dummies)

Explanatory Variables	Unconditional	Conditional						
		Direct effects	Total effects					
Constant	0.02485 (6.734)	0.05059 (5.033)	0.04140 (5.171)	0.02454 (6.570)	0.03717 (5.577)	0.02419 (6.613)	0.024795 (6.652)	0.02520 (6.610)
Igvapc[75]	0.00282 (1.463)	0.01281 (2.981)	0.00952 (2.612)	0.00347 (1.542)	0.00880 (2.534)	0.00214 (1.116)	0.002834 (1.463)	0.000252 (1.207)
luxdij		−0.00546 (−1.654)	−0.00627 (−2.322)					
es[75]		0.00654 (0.656)		0.00529 (0.577)				
ps[1]		−0.00608 (−1.623)			−0.00709 (−2.209)			
ps[2]		−0.00595 (−2.304)				−0.00561 (−2.234)		
border[93]		−0.00199 (−1.071)					0.000187 (0.114)	
hcap		−0.00080 (−1.267)						−0.00022 (−0.386)
Moran'sI	0.1451 (5.53)	0.1355 (5.84)	0.1555 (6.05)	0.1515 (5.84)	0.1612 (6.16)	0.1411 (5.40)	0.1457 (5.68)	0.1392 (5.60)

Note(s): Figures in the parentheses denote t-statistics.
See Annex Table A2 for variables.
Source: Cambridge Econometrics (1996).

contracted due to loss of market share in the domestic market. Moreover, the degree of openness of each of these economies pre-1987 was different, with Ireland being already a more open economy and Spain being the least open one in the group. With the SMP, the dependency of these economies on the economic performance of the rest of the EU increased substantially as the periphery economies are, to a much greater extent than the core EU countries, price-takers in their export markets.

Overall, the SMP has triggered, through changes in trade, production and investment patterns, a series of static economic efficiency effects which produced one-off changes in the level of output in most periphery countries. On the other hand, the dynamic, long-term growth effects which depend on the accumulation of physical and human capital and on technical progress, are much more difficult to identify at this stage, partly due to the short time period that has elapsed since the implementation of the SMP.

Ireland, the country that has experienced above-average growth rates and better convergence within the EU in the period after 1985, has some unique features in its economic structure and economic history which have greatly influenced the adjustment process of its economy to the SMP shock. The first, is the large and growing presence of multinational corporations (MNCs). The second, is the close trade relation of Ireland with the UK and the fact that free trade with the UK has been in place for much longer than with the rest of the EU.

The large presence of multinational corporations determined the developments in both the volume and the structure of trade in Ireland. Manufacturing exports to the EU grew substantially

Table 23

Regressions based on 1987-93 growth (with country dummies)

Explanatory Variables	Unconditional	Conditional					
		Direct effects	Total effects				
Constant	0.02985 (3.229)	0.028185 (2.421)	0.026810 (2.527)	0.029850 (3.220)	0.03540 (3.294)	0.029787 (3.219)	0.028855 (3.103)
Igvapc[87]	0.00517 (1.375)	0.006536 (1.429)	0.004211 (1.031)	0.005585 (1.400)	0.00748 (1.680)	0.005097 (1.354)	0.005108 (1.359)
luxdij		0.007376 (1.544)	0.002336 (0.587)				
es[75]		0.05444 (0.531)		0.002863 (0.326)			
ps[1]		−0.005350 (−1.466)			−0.00324 (−1.012)		
ps[2]		−0.002796 (−1.166)				−0.001748 (−0.773)	
border[93]		0.001902 (1.069)					0.001640 (0.979)
Moran'sI	−0.0001 (1.54)	−0.0213 (0.90)	−0.0018 (1.55)	−0.0014 (1.52)	−0.0069 (1.30)	0.0005 (1.58)	−0.0022 (1.51)

Note(s): Figures in the parentheses denote t-statistics.
See Annex Table A2 for variables.
Source: Cambridge Econometrics (1996).

post SMP for the majority of sectors but mainly for sectors with a high level of MNCs activity (although there are interesting exemptions of sectors dominated by domestic firm activity). Similarly, the process of inter-industry specialization away from traditional labour intensive sectors into high tech, capital intensive activities which started in the early 1980s and has been strongly influenced by MNC investment, continued in the post SMP period.

The flows of new greenfield investment and FDI in the country has also been influenced by the behaviour of multinational corporations. Ireland experienced strong growth in FDI flows in the early 1980s while post 1987, FDI decreased both in absolute and relative terms. Flows in the post-1987 period are mainly originating in the US and Japan. FDI data, however, do not capture the reinvested profits of the MNCs already established in the country, which are among the major factors behind the increased physical and human capital accumulation observed in this country.

Portugal has also experienced healthy growth rates above the EU average in the period 1985-92 and has increased convergence with the EU. As the SMP coincided with the accession of Portugal to the EU it is however very difficult to disentangle the two effects.

The annual inflow of FDI more than doubled as a percentage of total investment compared to the 1981-85 period and this has been a major factor behind both physical and capital accumulation for all regions and sectors. Contrary to Ireland however, the largest increases in FDI flows occurred in the non-tradable sectors, such as construction and public works, banking and insurance, wholesale trade and market services, indicating that the majority of foreign firms aimed at taking advantage of domestic market opportunities. On the other hand, there has been selected FDI in industrial sectors with a strong export orientation, like food and beverages, electrical engineering, motor vehicles and components, which have affected the specialization structure of Portuguese manufacturing.

Table 24

Regressions based on 1975-87 growth (with country dummies)

Explanatory Variables	Unconditional	Conditional					
		Direct effects	Total effects				
Constant	0.04403 (5.971)	0.05256 (6.020)	0.05087 (6.064)	0.04363 (5.922)	0.05724 (7.284)	0.04210 (5.758)	0.04368 (5.853)
Igvapc[75]	0.01017 (2.768)	0.01655 (3.800)	0.01278 (3.127)	0.01170 (2.974)	0.01716 (4.016)	0.00905 (2.511)	0.01013 (2.749)
luxdij		0.00233 (0.582)	−0.00582 (−1.678)				
es[75]		0.00958 (1.127)		0.00965 (1.252)			
ps[1]		−0.01049 (−3.578)			−0.00995 (−3.846)		
ps[2]		−0.00595 (−2.976)				−0.00471 (−2.375)	
border[93]		−0.00026 (−0.174)					0.00050 (0.340)
Moran'sI	−0.0092 (1.16)	−0.0413 (0.26)	−0.0278 (0.47)	−0.0037 (1.42)	−0.0476 (−0.38)	−0.0095 (1.16)	−0.0110 (1.14)

Note(s): Figures in the parentheses denote t-statistics.
See Annex Table A2 for variables.
Source: Cambridge Econometrics (1996).

Trade creation was strong in most sectors (accounting for most of manufacturing output and exports) and high import penetration lead to exit of inefficient producers and triggered higher investment by 'survivors' as a response to the new competitive environment. The impact was negative mainly for the medium-quality products, which represent over half of the Portuguese trade, but has produced limited improvements for low- and high-quality products. A process of specialization started developing in textiles, clothing and footwear, non-metallic mineral products, timber and furniture, electrical engineering and motor vehicles, the latter mainly due to foreign investment discussed above.

Greece's economic performance has been very erratic in the post SMP period and is the country that has converged less with the EU in the period under examination.

The Greek economy was characterized by a weak manufacturing base with over half of manufacturing output concentrated in very few sectors of low/moderate demand growth and low technological content (namely, food, textiles and minerals extraction). Moreover, three quarters of industrial production were concentrated in only three (out of a total of eleven) regions. Intra-industry trade was at very low levels and Greek exports drew their competitiveness from static comparative advantages such as cheap labour and the availability of raw materials.

The SMP induced a strong (the strongest from the cohesion countries) structural shock in the Greek economy as a large number of sectors, representing a substantial part of output and employment, were exposed to competition. For the majority of manufacturing sectors intra-industry trade increased post 1987 but remains still at lowest level among the EU countries. Trade creation effects were accompanied by an increase of exports to non-EU countries but overall no important specialization trends have emerged over the examined period. With few exceptions the bulk of trade continues to concentrate in activities of low technology and weak international demand.

Contrary to Portugal and Spain the flows of FDI increased only slightly post SMP and were mainly concentrated in one region. There are few indications of a physical and human capital accumulation effects.

Spain's economic performance in the post-1987 period has been stable with annual growth above the Community average but a slow convergence progress with the rest of the EU.

Expectations of the effects of the SMP were moderate in comparison to the rest of the cohesion countries. Spain, as the largest of the periphery economies, had a productive structure with a high level of sectoral diversification and the relative weight of sectors sensitive to the SMP was much lower than in Portugal and Greece. Overall the impact of accession which coincided with the SMP was more influential for the economic developments in Spain than the SMP. The structural shock was much more limited even when one examines the impact in the less-developed objective 1 regions of the country.

Intra-industry trade intensified particularly in products of medium and low quality and in sectors with strong or medium Community demand. The strong trade creation affects were not at the expense of trade with non-EU countries. The overall impact from the SMP at the regional level was not of a large enough scale so as to alter substantially the regional ranking of sectoral concentration.

FDI flows increased post 1986 and it is interesting to note a convergence in the share of FDI attracted by the various regions in the country. Contrary to the past, less attractive regions attracted increasing shares of FDI.

7.5.2. Distinguishing the effect of structural funds

Building on the econometric analysis used in section 7.4.2. above, Cambridge Econometrics estimated a selection of equations including a variable which measures structural fund spending per capita by region for the four cohesion countries over the period 1989-93. The results, both with and without national dummies, for the post-SMP period show that the replacement of the objective 1 dummy by the structural funds spending variable makes very little difference to the model parameter estimates presented in Tables 21 and 23 above. Cross-region structural fund variations are not significant,

Table 25

Regressions based on 1987-93 growth (without country dummies)

Explanatory variables	All regions				OBI regions	
	Direct effects	Total effects	Direct effects	Total effects	Direct effects	Total effects
Constant	0.029714	0.02980	0.029775	0.02999	0.03658	0.0333
	(2.61)	(3.55)	(2.60)	(3.55)	(1.09)	(1.65)
Igvapc[87]	0.6752	0.00637	0.006745	0.00644	0.00727	0.00846
	(1.65)	(1.73)	(1.64)	(1.74)	(0.58)	(0.98)
luxdij	-0.000990		-0.000929		-0.00895	
	(-0.29)		(-0.27)		(-0.80)	
es[75]	0.006670		0.006547		0.00247	
	(0.65)		(0.63)		(0.08)	
obl_ecu	-0.001705	-0.00317	-0.000873	-0.00073	-0.00027	-0.00426
	(-0.26)	(-0.54)	(-0.09)	(-0.07)	(-0.02)	(-0.24)
ps[1]			-0.000651	-0.00168		
			(-0.11)	(-0.28)		
ps[2]	0.003315		-0.003318			
	(-1.23)		(-1.23)			
border[93]	0.005716		0.005711		0.01557	
	(2.97)		(2.95)		(2.02)	
hcap	-0.000550		-0.000562		0.01557	
	(-0.85)		(-0.85)		(2.02)	

See Annex Table A2 for variables.
Source: Cambridge Econometrics (1996).

Table 26

Regressions based on 1987-93 growth (with country dummies)

Explanatory variables	All regions				OBI regions	
	Direct effects	Total effects	Direct effects	Total effects	Direct effects	Total effects
Constant	0.026763	0.03378	0.027424	0.03499	0.03684	0.04743
	(2.27)	(3.15)	(2.33)	(3.32)	(1.10)	(2.40)
Igvapc[87]	0.005761	0.00680	0.006318	0.00731	0.01817	0.01810
	(1.26)	(1.54)	(1.37)	(1.63)	(0.96)	(1.42)
luxdij	0.006015		0.007529		0.01139	
	(1.30)		(1.57)		(0.95)	
es[75]	0.05305		0.005982		−0.01205	
	(.51)		(0.58)		(−0.30)	
obl_ecu	−0.007427	−0.0487	0.006270	0.00452	0.00184	0.00296
	(−1.00)	(−0.73)	(0.45)	(0.38)	(0.09)	(0.15)
ps[1]			−0.00797	−0.00512		
			(−1.16)	(−0.77)		
ps[2]	−0.02633		−0.002815			
	(−1.10)		(−1.17)			
border[93]	0.001917		0.001907		−0.00589	
	(1.07)		(1.07)		(−0.69)	

See Annex Table A2 for variables.
Source: Cambridge Econometrics (1996).

indicating that variations in structural fund spending did not have a significant effect on regional growth variations (see Tables 25 and 26).

The above indication that there is no direct relationship between the amount of structural funds transfers to a region and its convergence performance does not however exclude the possibility of positive structural funds growth effects for the recipient countries. Structural funds transfers in the objective 1 regions, and in particularly in the four cohesion countries, are of a scale that their effects can be assessed by macroeconomic model simulations of an *anti-monde*. Community transfers are combined with national funding for the financing of multiannual development programmes called Community support frameworks (CSFs). Using the (new) Quest II model, DG II has estimated the structural funds impact on output for the period post 1989. The main characteristics of the model are the incorporation of forward-looking expectations, under which households base their savings/consumption decisions on their current and future expected net income as they try to smooth consumption over time. As a result the demand effects are more front-loaded than they would have been with a conventional Keynesian model. The supply-side is explicitly modelled, assuming increasing returns to investment in infrastructure and human resources. Finally, interest and exchange rates are determined endogenously, an aspect that is crucial for this analysis as it influences the saving and investment decisions.

For the period 1989-93, an *ex-post, anti-monde* simulation is made by taking off the CSF spending from the baseline. The results of the simulation estimate the impact of the total public CSF expenditure, i.e. EU transfers and domestic public cofinancing.

GDP % difference	EL	IRL	P	E
1989	1.79	0.76	1.39	0.76
1990	3.09	1.09	1.90	0.54
1991	1.53	1.32	1.76	0.40
1992	1.73	1.22	1.48	0.55
1993	1.63	1.27	1.45	0.54

In the short-term, demand effects are predominant since it takes a number of years for investment in infrastructure and education to pay off in terms of higher productivity. In the medium term, the favourable impact of the structural fund spending wears off due to the increase in real interest rates resulting from the stimulated demand effects which is anticipated by private investors. In the long term, GDP growth is picking up again due to positive supply side effects, which are of a more permanent nature and continue beyond the period of structural fund payments.

A different approach has been taken in a study by ESRI, which uses a model without a monetary/financial sector to estimate the CSF effects. In their simulations all structural funds assistance is combined into one policy shock that starts in 1989. The supply-side is modelled, assuming increasing returns to investment in physical infrastructure, human resources and from production/investment aid to the private sector. In the following simulation the assumption is made that there are no externalities associated with the CSF expenditures, i.e. any build-up of stocks of infrastructure or of stocks of trained labour which do not have additional impacts over and above the standard ones. Moreover, this simulation does not include the effects of the increased FDI observed in Portugal and Spain post 1987. The study estimates the effects of total CSF expenditure, i.e. EU transfers, domestic public cofinancing and domestic private cofinancing. The following percentage deviations from the no-CSF baseline projection have been estimated for 1995:

GDP % difference	EL	IRL	P	E
1995	6.16	1.65	8.15	1.94

The results for the four cohesion countries are of a larger scale than the ones estimated by the Quest II model and depend largely on the size of the transfer, (and the accompanying public and private sector cofinancing) as well as the public investment multiplier effect. A major factor behind the diversity of the results is the lack of a financial sector in the Hermin model.

Both exercises demonstrate that the effects of the structural fund transfers can be very different across countries and, more important, that the estimations from such simulations are largely dependent on the properties of the models used in each case.

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Table A1

List of variables used in the Member State regressions

Explanatory variables ⬇	Conditional beta-convergence
Constant	
pogvapc	(log) starting level of GVA per capita in 1985 ecu prices
accel	Acceleration term = poim * pogvapc
poedu	Percentage of graduates in the whole population
poavlab	Change in labour force participation rate
poinv	Investment to output ratio
porsd	R&D spending to output ratio
poaveu	Dummy for joining the EU
poim	Dummy for IMP period (1 from 1987-93)
sspa	Dummy for Objective 1 part of Spain
intsspa	poim * sspa
sita	Dummy for Objective 1 part of Italy
intsita	poim * sita
poire	Dummy for Ireland
intire	poim * poire
poob1	Dummy for Objective 1 countries
intob1	poim * poob1
	Unconditional beta-convergence
gvapc	(log) starting level of GVA per capita in 1985 prices
sita	Dummy for Objective 1 part of Italy
spa	Dummy for Objective 1 part of Spain
ire	Dummy for Ireland
aveu	Dummy for joining the EU
Ob1	Dummy for Objective 1 countries

Source: Cambridge Econometrics (1996).

Table A2

List of variables used in the regional regressions

Explanatory variables ⬇	Conditional beta-convergence
Constant	
lgvapc	(log) starting level of GVA per capita
luxdij	Distance from Luxembourg
es	Manufacturing share of total employment
ps[1]	Dummy for Objective 1 regions
ps[2]	Dummy for Objective 2 regions
border	Dummy for border regions
hcap	Percentage of graduates in the whole population
lemppc	(log) starting level of employment rate
portrg	Participation rate growth
gvapcgr	GVA per capita growth

Source: Cambridge Econometrics (1996).

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